Business Outlook and Financing Alternatives of Finnish Entrepreneurs During the COVID-19 Crisis*

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Abstract:
This paper reports findings from a survey of 1,008 Finnish small-and-medium-sized enterprises (SMEs) on their business outlook and financing alternatives during the COVID-19 crisis as of June 2020. Sales have dropped by an average of 25%. The decline in revenues is generally uncorrelated with the number of coronavirus cases in a municipality, except in the hospitality industry and the arts, entertainment and recreation industry. 54% of respondents have applied for public subsidies, while only 16% have applied for a new loan from the bank. Across the cross-section of firms, firms reporting a larger loss of revenues and with a more precarious financial position at the end of 2019 (high debt and/or low cash) were more likely to apply for both direct grants as well as loans.

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1. Introduction

The COVID-19 pandemic has led to both a significant drop in revenues for businesses and unprecedented support programs from governments around the world. The effect on revenues has varied greatly across industries. Understanding in detail the impact of the crisis on firms, as well as the factors driving the take-up of support programs, is crucial for government policy. In this paper, we provide evidence of the impact of the pandemic using a sample of 1,008 Finnish small- and medium-sized enterprises (SMEs) based on a survey conducted in June 2020. We also document measures taken by these firms in response to the crisis. In addition, we show that the intensity of the crisis in a municipality (measured by infections per population) was associated with higher revenue losses in certain service sectors, namely the hospitality and the arts, entertainment and recreation industries.

The objective of our paper is to document the impact of COVID-19 on Finnish SMEs and the measures taken by firms in order to support and inform policymakers and the public. In particular, we hope that our results will help policymakers understand the characteristics of firms that used Finland's first two COVID-19 support programs for SMEs (Business Finland's development grants and Finnvera's loan guarantees). The objective of this paper is descriptive: In a companion paper based on the same dataset (Paaso, Pursiainen and Torstila, 2020), we use the pandemic shock as a natural experiment to investigate the causal impact of individual managerial attitudes towards debt on the take-up of debt-based rescue packages. Meanwhile, this paper uses the same dataset to document aspects of the COVID-19 pandemic in Finland that are particularly relevant to the Nordic audience. Our paper complements work by the Helsinki GSE Situation Room (2020) as well as surveys conducted by the Federation of Finnish Enterprises (Suomen Yrittäjät) on the impact of the crisis on firms.

We find that the pandemic had an impact on most firms in our sample, with over half of firms reporting decreasing sales. There are large differences across industries but, at least in our sample of SMEs, differences across firm sizes are relatively small. The hardest-hit sectors also expect revenues to recover the slowest. We also look at the application rates for the main two support programs offered by the government prior to the summer: Development grants and loan guarantees. We find high application rates for direct grants, but notably limited interest in loans. Interest in both grants and loans increases with the degree of financial distress, as measured by either the decrease in sales or the firm's end-of 2019 financial position (in terms of net debt / turnover or cash holdings / turnover).

The structure of our paper is as follows: First, we document some general facts about the impact of the COVID-19 crisis on Finnish SMEs. Revenue fell in most sectors, with certain sectors (hospitality, certain services) being especially hard hit. We then test whether this shock is associated with the spread of the virus in the municipality in which a firm operates as well as the pre-crisis financial policies of the firm.[1] After documenting the extent of the crisis, we turn to the measures taken by firms. Firms generally preferred to apply for direct subsidies instead of government-guaranteed bank loans, despite an application process widely viewed as cumbersome. We document differences across industries in applications for outside financing as well as within-industry differences based on the pre-crisis financial policies of a firm.

Our data come from a survey of 1,008 SMEs conducted between May 28 and June 8, 2020.

[1] An oft-debated topic in the design of epidemiological preventative measures is whether the impact of the virus on business is due to fear of the virus, lockdowns imposed by the government, or a combination of both. We cannot definitively answer this question but rather provide suggestive evidence that cross-municipality differences in fear of the virus (as proxied by differences in the level of infection across municipalities) are not associated with decreases in revenue, except in certain industries.

The survey was carried out by TNS Kantar, a market research firm, and was sent via email to members of the Federation of Finnish Enterprises (Suomen Yrittäjät) as well as firms in the Bisnode Finland database. We aimed to oversample firms with more than 5 employees and indeed they represent 45% of our sample. 91% of our respondents are owner-managers while 6% are hired CEOs, with the rest being CFOs, other management, or undisclosed.

Our questionnaire asked a range of questions on the impact of the crisis on firms, their expected survival time, and the measures they had taken in response to the crisis. In addition, we included a range of questions on personality traits and values and their interest in hypothetical support programs (both of these are used in Paaso, Pursiainen and Torstila, 2020). We were able to match our survey responses to registry-based financial information (from Bureau van Dijk's Orbis database) using a firm identifier (Y-tunnus), but we also asked respondents for their firm's 2019 revenue as well as the industry in which they operate.

The aim of oversampling firms with over 5 employees is to allow us to examine the impact of the crisis across the size distribution of firms. As 89.4% of Finnish firms had 0 to 4 employees in 2018 (Statistics Finland), a survey aiming at perfect representativeness would have left us with very few large SMEs that are significant employers. In order to quantify the differences between our sample and the universe of firms, we compare our sample to the population of all Finnish firms from Statistics Finland. The firms in our sample are generally larger (about twice as large on average in terms of revenues). We also have significantly fewer firms in some industries, such as agriculture. In addition, there may be other differences between our sample and the universe of Finnish firms. For instance, firms struggling with the crisis may not have had time to fill in a survey, leaving us with a subsample of better-performing firms. Responders may also exaggerate the financial distress of their firm if they perceive this to have an effect on government support. However, we think our sample of firms is an interesting cross-section of operating firms, including SMEs that employ significant amounts of personnel (whereas the full universe of firms also includes firms such as housing corporations), and from which we can learn about the impact of the crisis.

In spring 2020, support for SMEs in Finland mainly took on two forms: Government guarantees for loans, approved by Finnvera, a credit-guarantee agency, and administered via the private-sector banking system; and direct grants. There were three different forms of direct grants, depending on the size of the firm applying: (1) "development grants" for firms with over five employees, administered via Business Finland (an agency which processes various kinds of business subsidies such as R&D grants), (2) grants from regional Centres for Economic Development, Transport and the Environment (henceforth ELY centres according to their Finnish abbreviation) for firms with 2-4 employees, and (3) grants from municipalities for sole proprietors. While the government announced direct grants for hard-hit industries and firms later in the summer of 2020, these had not yet been approved at the time of our survey and we do not ask about them.

In our sample, 64% of firms reported that revenues had decreased, with this effect being larger in the hospitality (restaurants and hotels) and the arts, entertainment and recreation (AER) sectors. In most sectors, the reported loss of revenue is unrelated to the level of infections in a municipality. However, in the hospitality and AER sectors, there appears to be a negative association, so that firms in municipalities with a higher level of infections face larger drops in revenue.[2] Of the firms in our sample, 54% had applied for direct support from either Business Finland, local municipalities, or ELY centres. Only about 19% had applied for a bank loan despite the government guarantees, with

[2] A plausible hypothesis is that fear of the virus leads to consumers changing their behavior. We show that cross-sectional variation in infections across Finland does not appear to correlate with changes in revenue, other than in two sectors. However, this association should not be interpreted as causal evidence for or against the hypothesis.

the most commonly stated reason for not applying for a loan being that the firm did not need a loan.

Applications for both direct support and loans were highest in the hospitality and AER sectors. In addition, even after controlling for industry-specific application probabilities, firms that were hardest hit by the crisis (in terms of reported lost revenue) were most likely to apply for loans and/or direct support. We observe no major differences in applications for support across the firm size distribution (other than differences in the type of support applied for), but find that larger firms were more likely to apply for loans.

A number of other papers have documented the impact of the crisis on SMEs around the world. Alekseev et al. (2020), Barrero, Bloom and Davis (2020), Bartik et al. (2020), Fairlie (2020), Humphries, Neilson and Ulyssea (2020), and Li (2021) show that US SMEs (and firms in general) faced declines in revenue as a result of the pandemic. Brülhart et al. (2020) report evidence from Switzerland and Cowling, Brown, and Rocha (2020) from the UK. Humphries, Neilson and Ulyssea (2020) and Bartik et al. (2020) both show that, while the take-up of CARES Act rescue programs was generally high across firms, some firms (such as the smallest firms) were far less likely to apply for support. In Finland, the Helsinki Graduate School of Economics (Helsinki GSE) Situation Room, the Federation of Finnish Enterprises (Suomen Yrittäjät), as well as other trade bodies have surveyed firms about their expectations and actions during the crisis. We combine survey data with registry-based financial information to further study the characteristics of firms applying for (and not applying for) support programs.

In the next section, we describe our survey methods and the representativeness of our sample. We then discuss our results and possible policy implications.

2. Data and methods

2.1. Survey

Our data come from a survey of 1,008 Finnish SMEs.[3] We initially set about to survey 1,000 firms and commissioned a survey company, TNS Kantar, to technically implement the survey. The survey was completed on a cloud-based platform, with invitations sent first via email to member firms of the Federation of Finnish Enterprises (Suomen Yrittäjät), and then to firms listed in the Bisnode Finland database, with the aim of oversampling firms with more than 5 employees from this source. All of the firms that responded to the survey are private firms. We note that a small subgroup of them are owned or part-owned by private equity firms.

The survey took on average 8 minutes to complete. 91% of respondents were owner-managers with about 6% being hired CEOs and the remaining respondents having other managerial roles.

The first part of the survey asked respondents for basic demographic and background information, such as the age of the respondent and the age of the firm. We then asked about the impact of COVID-19 on their firm, including the revenue impact and survival horizon of the firm. We then asked about future expectations about the economy in general (expected GDP growth) and specifically for the firm.

The next section of the survey asked about the steps taken by firms in response to the crisis, both in terms of government programmes applied for, but also adjustment measures taken

[3] In a companion paper (Paaso, Pursiainen and Torstila, 2020), we use only the owner-managers in this sample for our main analyses. This is because our aim in that paper is to study the impact of the traits of key decision-makers on firm policy. In contrast, in this paper, which aims to describe the impact of the crisis on SMEs, the full sample of respondents is more relevant.

such as layoffs, rent deferrals and so on. We also asked firms that had not applied for a loan their reasons for not doing so.

The final section of the survey is not used in this paper. In it, we asked participants about their willingness to use hypothetical rescue programs as well as a range of questions about their attitudes towards debt, banks, and risk as well as a question about their subjective financial literacy.

The survey is described in more detail in Paaso, Pursiainen and Torstila (2020).

2.2. Summary statistics and representativeness

Table 1 presents summary statistics on our sample of firms. 58% of respondents represented firms with fewer than 5 employees. The firms in our sample reported on averages sales of 1.5 million euros per year.[4] Slightly fewer than half (47.9%) of firms currently reported having any debt. **Figure 1** presents the distribution of firms by industry and size that responded to our survey as well as the role of the survey respondent within each firm.

Table 1: Summary statistics
This table presents summary statistics for our sample. The figures in the "Firm characteristics" part are self-reported, whereas those in the "Accounting ratios" part are based on registry financial information, which was not available for all firms. The final part, which reports firm actions, is also self-reported. Sales, the level of debt and all accounting ratios are winsorized at 5% at both tails.

	MEAN	STANDARD DEVIATION	P10	P50	P90	VARIABLE COUNT
Firm characteristics						
1 employee	0.352	0.478	0.000	0.000	1.000	1,008
2-4 employees	0.228	0.420	0.000	0.000	1.000	1,008
5-9 employees	0.209	0.407	0.000	0.000	1.000	1,008
10-50 employees	0.177	0.382	0.000	0.000	1.000	1,008
51-250 employees	0.028	0.164	0.000	0.000	0.000	1,008
250+ employees	0.006	0.077	0.000	0.000	0.000	1,008
Sales ('000 euros) (self-reported)	1,506.7	4,650.4	20.0	288.0	3,000.0	890
Firm debt ('000 euros) (self-reported)	365.2	1,262.5	0.0	40.0	500.0	566
Has debt	0.479	0.500	0.000	0.000	1.000	1,008
Had debt in last 5y	0.612	0.488	0.000	1.000	1.000	1,008
Accounting ratios						
Debt/Assets	0.137	0.205	0.000	0.000	0.488	649
Net debt/EBIT	-0.862	3.883	-5.261	-0.924	4.584	515
Net debt/Turnover	-0.066	0.236	-0.346	-0.051	0.237	617
Cash/Assets	0.295	0.257	0.015	0.228	0.716	622
Firm actions						

[4] This figure is based on winsorized (95%, both tails) sales. In contrast, the mean self-reported sales in Table 2 are based on unwinsorized sales figures to ensure a like-for-like comparison with the national averages.

Applied for a new bank loan	0.162	0.368	0.000	0.000	1.000	1,008
Applied for any loan	0.189	0.392	0.000	0.000	1.000	1,008
Applied for direct support	0.536	0.499	0.000	1.000	1.000	1,008
Applied for equity	0.097	0.296	0.000	0.000	0.000	1,008
Has laid off	0.062	0.242	0.000	0.000	0.000	1,008
Has furloughed	0.286	0.452	0.000	0.000	1.000	1,008
Canceled investments	0.168	0.374	0.000	0.000	1.000	1,008
Unpaid entrepreneurial compensation	0.197	0.398	0.000	0.000	1.000	1,008
Unpaid taxes	0.123	0.329	0.000	0.000	1.000	1,008
Unpaid wages	0.010	0.099	0.000	0.000	0.000	1,008

Figure 1: Distribution of respondents by role and company size
These figures present the distribution of survey respondents by the role of the respondent within the firm the industry (self-reported) in which the firm operates.

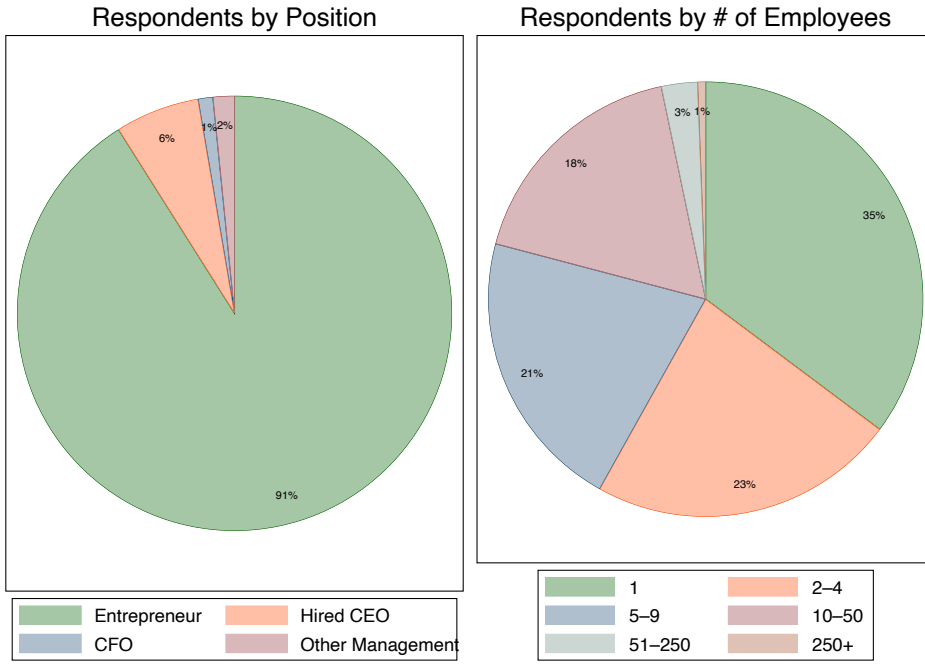


Table 2 presents a comparison of our sample firms to the universe of Finnish firms from Statistics Finland (Statistics Finland, 2018). The firms that participated in our survey are on average larger than a random sample of Finnish firms, with revenues roughly twice as high as the average firm. This is as expected given that, according to Statistics Finland, 89% of Finnish firms employ fewer than 5 workers while in our sample the corresponding percentage is 58%. The biggest discrepancy in terms of sectoral composition is the fact that our sample contains very few firms in the agriculture, forestry and fishing sector compared to the national average, but the vast majority of these firms nationally are very small. However, the revenue share of agriculture, forestry and fishing in our sample is close to the national average.

Table 2: Comparison of the sample with the full universe of Finnish firms
This table presents the average revenue (self-reported, unwinsorized) of the firms in our sample versus the average revenue of firms in each industry in 2018 according to Statistics Finland. The 3rd to 6th columns compare our sample to the universe of registered Finnish firms, both in terms of the number of firms (columns 3-4) and the revenue of these firms (5-6). The industry classification follows Statistics Finland's TOL 2008 standard.

	AVG. REVENUE (EUR '000)		% OF FIRMS		% OF REVENUE	
	SAMPLE	STATFIN	PAPER	STATFIN	SAMPLE	STATFIN
Agriculture, forestry and fishing	991	37	1.8	20.8	0.8	0.7
Mining and quarrying	50	2,445	0.2	0.3	0.0	0.5
Manufacturing	9,361	6,655	9.9	5.5	41.4	31.4
Electricity, gas, steam and air conditioning	10,052	15,633	1.6	0.3	7.1	3.4
Water supply; sewerage, waste management	1,373	1,998	0.7	0.4	0.4	0.7
Construction	2,816	924	7.9	11.3	9.9	9.0
Wholesale and retail trade; repair of motor vehicles and motorcycles	2,303	2,951	12.6	11.2	13.0	28.3
Transportation and storage	1,528	1,184	5.1	5.4	3.5	5.5
Accommodation and food service activities	820	587	7.1	3.3	2.6	1.7
Information and communication	1,481	2,062	10.1	3.0	6.7	5.2
Financial and insurance activities	813	-	0.4	2.3	-	-
Real estate activities	1,734	403	2.9	8.5	2.3	3.0
Professional, scientific and technical activities	415	437	6.2	10.1	1.1	3.8
Administrative and support service activities	1,868	899	3.7	3.9	3.1	3.0
Education	202	227	1.3	1.1	0.1	0.2
Human health and social work activities	894	435	6.3	5.0	2.5	1.9

Arts, entertainment and recreation	620	670	2.9	2.2	0.8	1.2
Other service activities	529	88	14.0	5.4	3.3	0.4
Unknown / Other	9,415	18	4.9	0.0	1.4	0.0
Sample average	**2,272**	**1,165**				

Another way to study representativeness (when size is controlled for) is to look at actions taken by the firms in our sample, versus registry-based actions for firms of a similar size. While we do not have access to the microdata, we look at the Helsinki GSE Situation Room report from June 18, 3 weeks after our survey (with data until the 15th of June for most outcomes). They report the share of firms in each size group (by number of employees) and find that about 10% of firms with under 5 employees have furloughed staff, which is roughly in line with our results. For firms with between 6-10 employees, they report that about 35% of firms have furloughed staff whereas in our sample this proportion is about 52%. The Helsinki GSE Situation Room also presents data on the proportion of firms (by size and our industry) having received at least one subsidy from Business Finland up to May 25. The share of firms reporting a subsidy is much lower than in our sample—however, this may be driven by a focus on Business Finland subsidies, which were unavailable to firms with fewer than 5 employees, which make up the bulk of their sample.

We re-emphasize that we do not claim that our sample is representative, but rather that focusing the analysis on slightly larger firms is interesting due to their impact on the general economy and employment.

3. Results

3.1. Impact of the crisis

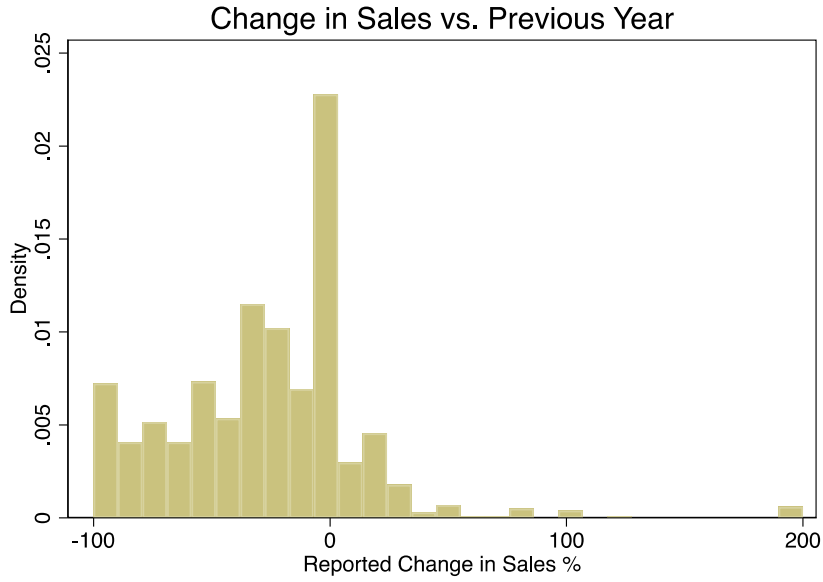
We start by showing that the crisis had a negative impact on the firms in our sample. 64% of firms reported that sales had decreased compared to the situation the previous year, with the average change in sales being 25%. **Table 3** presents the reported change in revenue for firms by industry and size, while **Figure 2** shows a histogram of the distribution of the change in sales. Firms in accommodation and food service (hospitality) activities, and arts, entertainment and recreation (AER) industries were particularly hard hit, with average revenue decreases of 59% and 57%. 39% of firms expect that it will take over a year for their revenue to rise to pre-crisis levels, with this share increasing in the hardest-hit industries (hospitality and AER).

Table 3: Sales change
Panel A of this table presents the average change in sales for each industry, as well as the percentage of firms reporting that sales have decreased, stayed the same or increased. Panel B presents the same information by firm size (number of employees). The industry classification follows Statistics Finland's TOL 2008 standard.

PANEL A: BY INDUSTRY					
		PERCENT OF FIRMS WHOSE SALES…			
	MEAN CHANGE IN SALES (%)	DECREASED	STAYED THE SAME	INCREASED	NO ANSWER
Agriculture, forestry and fishing	-3.8	30%	45%	25%	0%
Mining and quarrying	0	0%	100%	0%	0%
Manufacturing	-20	60%	27%	11%	2%
Electricity, gas, steam and air conditioning	-22	56%	19%	19%	6%
Water supply; sewerage, waste management	-16	33%	33%	33%	0%
Construction	-14	58%	28%	13%	1%
Wholesale and retail trade; repair of motor vehicles and motorcycles	-25	70%	13%	15%	2%
Transportation and storage	-32	70%	18%	10%	2%
Accommodation and food service activities	-59	90%	6%	1%	3%
Information and communication	-18	57%	16%	22%	5%
Financial and insurance activities	15	25%	25%	50%	0%
Real estate activities	-21	58%	18%	12%	12%
Professional, scientific and technical activities	-8.2	44%	34%	20%	2%
Administrative and support service activities	-15	44%	28%	25%	3%
Education	-36	71%	29%	0%	0%
Human health and social work activities	-28	70%	16%	9%	5%
Arts, entertainment and recreation	-57	80%	20%	0%	0%
Other service activities	-27	70%	20%	9%	1%
Unknown / Other	-26	66%	14%	12%	8%
Sample	-25	64%	20%	13%	3%

PANEL B: BY FIRM SIZE					
NUMBER OF EMPLOYEES	MEAN CHANGE IN SALES (%)	DECREASED	STAYED THE SAME	INCREASED	DON'T KNOW
1	-27	62%	22%	11%	5%
2–4	-30	66%	19%	11%	4%
5–9	-24	66%	20%	14%	0%
10–50	-20	63%	21%	16%	0%
51–250	-16	78%	7%	15%	0%
250+	4.2	17%	33%	50%	0%
Sample	-25	64%	20%	13%	3%

Figure 2: Change in sales
This histogram presents the self-reported change in sales for our sample firms (as of June 2020) compared to the same period in 2019.



Firms in the hardest-hit industries are also in the most precarious position financially. In **Table 4** we present the survival expectations of firms, i.e. how long they could continue operating in similar conditions as in June 2020 before facing insolvency. We see that firms in hospitality and AER industries are particularly likely to report short "survival times."

Table 4: Firm's Expectations of Survival
This table presents the answers of firms to the question "Assume the virus situation remains the same as today. How long would your firm survive without new financing or assistance?" The replies >12 months and "The crisis did not affect our firm negatively" have been grouped into one answer. The industry classification follows Statistics Finland's TOL 2008 standard.

PANEL A: BY INDUSTRY	WITHOUT ASSISTANCE OR NEW FINANCING, YOUR FIRM WOULD SURVIVE FOR… (MONTHS)						
	<1	1-2	2-3	3-4	5-6	7-12	>12
Agriculture, forestry and fishing	0%	6%	11%	6%	11%	11%	56%
Mining and quarrying	0%	0%	0%	0%	0%	0%	100%
Manufacturing	2%	7%	8%	11%	17%	13%	42%
Electricity, gas, steam and air conditioning	0%	0%	0%	20%	20%	0%	60%
Water supply; sewerage, waste management	0%	0%	0%	17%	17%	17%	50%
Construction	1%	3%	7%	24%	8%	15%	42%
Wholesale and retail trade; repair of motor vehicles and motorcycles	6%	4%	16%	17%	11%	10%	36%
Transportation and storage	2%	0%	11%	26%	11%	13%	38%
Accommodation and food service activities	9%	14%	19%	23%	16%	4%	14%
Information and communication	3%	2%	4%	16%	16%	17%	41%
Financial and insurance activities	0%	0%	0%	0%	0%	0%	100%
Real estate activities	3%	3%	9%	9%	16%	9%	50%
Professional, scientific and technical activities	3%	2%	5%	18%	10%	15%	47%
Administrative and support service activities	0%	6%	3%	8%	17%	8%	58%
Education	0%	13%	19%	6%	25%	6%	31%
Human health and social work activities	3%	0%	10%	19%	14%	12%	41%
Arts, entertainment and recreation	14%	0%	20%	20%	20%	9%	17%
Other service activities	1%	6%	11%	21%	14%	17%	30%
Unknown / Other	0%	5%	18%	25%	11%	14%	27%
Sample	3%	5%	10%	18%	14%	12%	38%

PANEL B: BY FIRM SIZE							
NUMBER OF EMPLOYEES	<1	1-2	2-3	3-4	5-6	7-12	>12
1	4%	4%	12%	15%	12%	11%	42%
2–4	4%	6%	10%	24%	16%	12%	27%
5–9	3%	6%	12%	18%	15%	15%	32%
10–50	2%	4%	7%	16%	12%	12%	46%
51–250	0%	4%	4%	14%	21%	14%	43%
250+	0%	0%	0%	0%	17%	0%	83%
Sample	3%	5%	10%	18%	14%	12%	38%

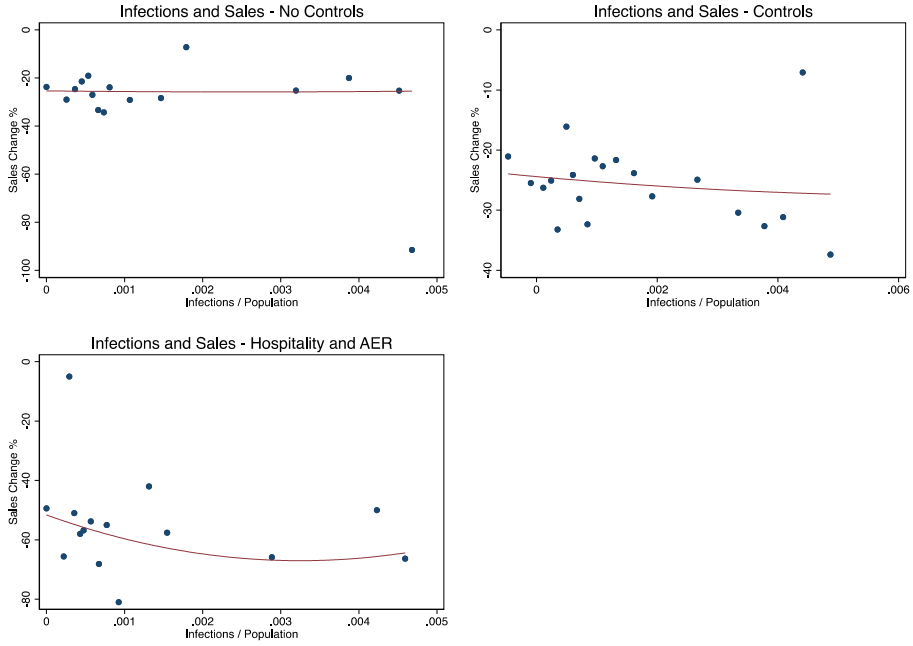
Next, we test whether a company's decrease in revenue is related to the extent of the spread of the virus in a municipality. In **Table 5**, we regress the reported percentage change in revenue on the number of infections divided by the population as of the beginning of September 2020.[5] We find that across most sectors, there is no significant (statistical or economical) relationship between the intensity of the crisis and a firm's reported decline in revenue. However, in the hospitality and AER sectors, there is a negative and significant relationship; an increase of 0.1 percentage points in the infections / population rate (in September) is associated with a 2.5% decrease in revenues (compared to a baseline drop in these sectors of over 50%). We also plot these relationships in binned scatterplots in **Figure 3**. It should be noted that the number of infections during the first wave is an underestimate (due to limited testing), so these estimates should be thought of as simply evidence of a correlation, not of estimates of its magnitude.

Table 5: Infections and loss of revenue
This table presents the results of an OLS regression where the dependent variable is the self-reported percentage change in revenue. Infections / pop is the cumulative number of documented infections, as of September 2020, divided by the municipality's population. Columns 1-3 include all firms, whereas columns 4-5 only include the hospitality, and arts, entertainment and recreation (AER) industries. Industry FE refers to industry fixed-effects at the level of self-reported 2-digit industry codes. Number of employees (category) fixed effects refer to fixed effects for self-reported employees in the categories 1, 2-4, 5-9, 10-50, 50-250, 250+. Standard errors clustered at the municipality level are reported in parenthesis.

	ALL FIRMS			HOSPITALITY AND AER	
	(1)	(2)	(3)	(4)	(5)
Infections / Pop	-25.73	-190.05	-627.02	-2,562.49**	-2,150.87*
	(481.3)	(547.25)	(555.25)	(1165.23)	(1265.75)
Constant	-25.52***	-25.25***	-24.54***	-54.42***	-55.07***
	(1.67)	(1.54)	(1.60)	(4.60)	(4.71)
Industry FE	No	Yes	Yes	No	No
Number of employees (category) FE	No	No	Yes	No	Yes
N	969	969	969	102	102
R2	0.000	0.112	0.128	0.017	0.072

[5] We use figures as of September 2020 as the Finnish Institute for Welfare and Health (THL) only provides cumulative infection numbers at the municipality level (they are reported daily but these figures are not made available for public use retrospectively). The number of infections / population ranges from 0.046% of the population to 0%, with a mean (in our sample, weighted by the number of firms in any given municipality) of 0.016%.

Figure 3: Infections and the impact of the crisis
These binned scatterplots present the relationship between the cumulative infections / population ratio (as of September 2020) in a municipality and the reported change in sales compared to 2019 for firms in these municipalities. The first (top left) graph includes all firms and no controls, the second graph (top right) plots the relationship after controlling for industry and size category fixed effects and the bottom graph plots the relationship without controls for the hospitality, and arts, entertainment and recreation (AER) industries.



3.2. Measures taken in response to the crisis

We next describe measures taken by firms to alleviate the cash flow shortage during the crisis. **Table 6** shows application rates for loans and direct support (i.e. grants) by firm size and industry. Within our sample, 54% of firms applied for at least one form of direct support, either from Business Finland, from municipalities, or from the regional Centre for Economic Development, Transport and the Environment (ELY-keskus). The hardest-hit sectors (hospitality and AER) were among the industries with the highest rates of applications (70% and 69% respectively). However, other sectors such as Information and Communication also had high application rates (62%). Only 19% of firms reported applying for new loans, even though support via loans was seen as a central part of the government's support to firms. The rate of applications for loans was highest in the hospitality industry at 35%. We also see that the smallest firms (1 employee) were least likely to apply for a loan and that firms with between 10-50 employees were most likely to do so, although we note that our sample of firms with over 50 employees is limited.

Table 6: Applications for loans and support
This table presents the proportion of survey respondents which applied for a loan, any kind of direct support (includes those that applied for multiple types of support, but excludes loan guarantees), as well as applications for support broken down by type of support. Panel A presents the data by industry, Panel B by firm size. BF support refers to Business Finland grants. ELY support refers to grants by Regional Development Centers. The industry classification follows Statistics Finland's TOL 2008 standard.

PANEL A: BY INDUSTRY					
	LOAN	ANY SUPPORT	BF SUPPORT	ELY SUPPORT	MUNICIPAL SUPPORT
Agriculture, forestry and fishing	15%	15%	5%	5%	5%
Mining and quarrying	0%	0%	0%	0%	0%
Manufacturing	23%	54%	40%	20%	4%
Electricity, gas, steam and air conditioning	6%	31%	19%	25%	13%
Water supply; sewerage, waste management	0%	17%	17%	0%	0%
Construction	18%	34%	18%	11%	11%
Wholesale and retail trade; repair of motor vehicles and motorcycles	25%	59%	27%	20%	21%
Transportation and storage	16%	58%	32%	20%	20%
Accommodation and food service	35%	70%	44%	27%	15%
Information and communication	15%	62%	40%	10%	19%
Financial and insurance activities	0%	25%	25%	0%	0%
Real estate activities	15%	39%	24%	15%	9%
Professional, scientific and technical	13%	43%	16%	16%	18%
Administrative and support service	6%	31%	11%	11%	8%
Education	29%	41%	24%	12%	18%
Human health and social work	9%	55%	16%	12%	31%
Arts, entertainment and recreation	23%	69%	43%	14%	20%
Other service activities	18%	62%	25%	14%	29%
Unknown / Other	20%	62%	36%	18%	24%
Sample	19%	54%	28%	16%	18%

PANEL B: BY FIRM SIZE					
NUMBER OF EMPLOYEES	LOAN	ANY SUPPORT	BF SUPPORT	ELY SUPPORT	MUNICIPALITY SUPPORT
1	9%	47%	8%	7%	40%
2–4	22%	57%	22%	37%	13%
5–9	24%	58%	45%	18%	3%
10–50	29%	59%	58%	6%	2%
51–250	19%	41%	37%	4%	0%
250+	17%	33%	33%	0%	0%
Sample	19%	54%	28%	16%	18%

The most common stated reason for not applying for a loan was not needing one (53% of non-applicants). 29% of non-applicants reported that a loan would increase the riskiness of the firm, 13% felt costs were too high, and 7% felt that the required collateral would be too high. We explore the reasons firms provide for not applying for loans in more depth in a companion paper (Paaso, Pursiainen and Torstila, 2020).

3.3. Characteristics of firms applying for support

We next study whether any firm characteristics are associated with applying for support and/or loans. In **Figure 4** and **Figure 5**, we plot the probability of applying for direct support and loans against a firm's subjective survival likelihood and their net debt and cash to turnover ratios at the end of 2019. We see that firms that consider survival to be a certainty (57% of the sample) are less likely to apply for grants and loans than firms that consider themselves likely to either survive (37% of the sample) or fail (3% of the sample). Firms that consider failure a certainty (1% of the sample) are less likely to apply for grants and loans than firms that are uncertain, but more likely than firms that consider survival certain, although this conclusion is uncertain due to the limited sample size.

Figure 4: Applications for support or loans by firm survival probability
This graph plots the proportion of firms applying for direct support and loans, distributed in categories by their answer to the question "How has the pandemic affected your firm's future?"

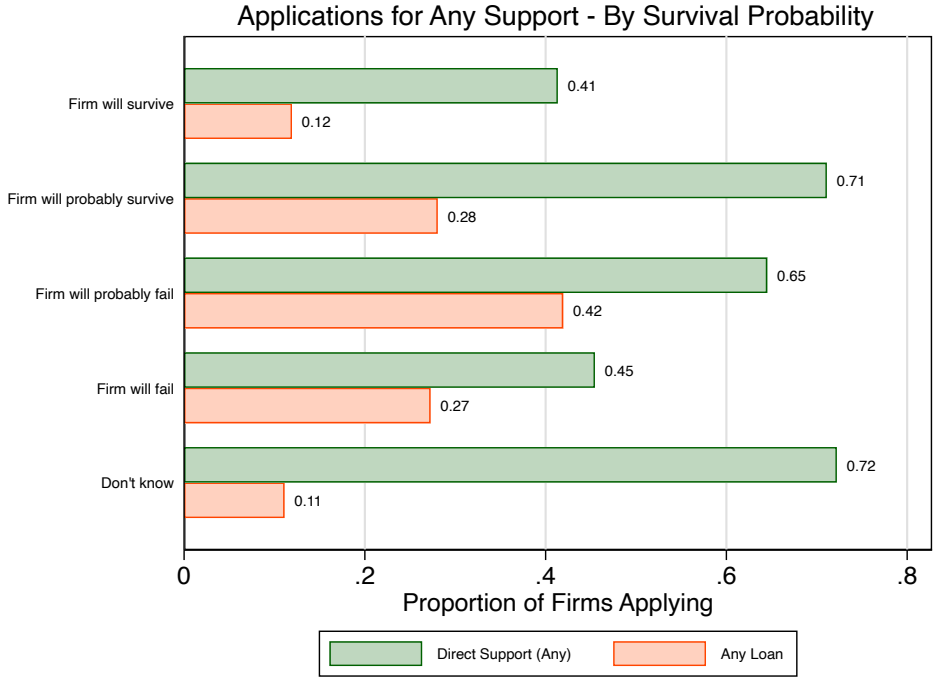
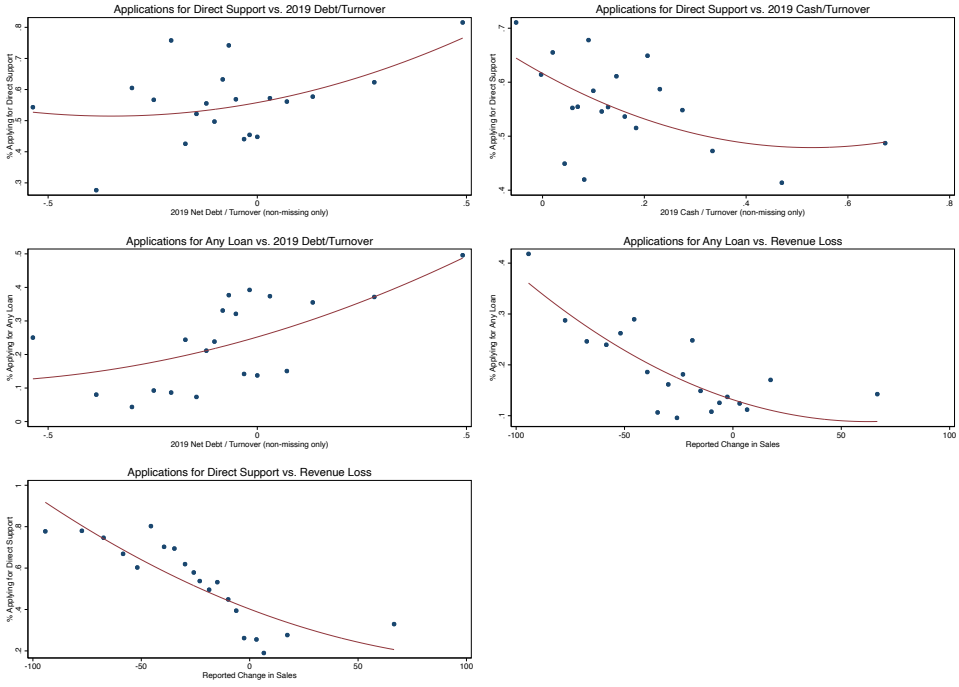


Figure 5: Applications for loans and support as a function of revenue lost and 2019 financial ratios
These binned scatterplots plot the proportion of firms applying for grants and loans against several 2019 financial ratios, and the reported loss in revenue in 2020. The top left graph is a binned scatterplot of the application rates for direct support against end-of-2019 net debt / turnover (based on registry information). The top right graph is a binned scatterplot of applications for direct grants vs. 2019 cash / turnover (from financial statements) whereas the middle left graph is a binned scatterplot of applications for loans vs. 2019 net debt / turnover. The middle right graph is a binned scatterplot of loan applications and the bottom left is grant applications, both against the reported loss of sales because of the crisis.



In addition, Figure 5 suggests that firms with higher debt and lower cash in 2019 were more likely to apply for loans and grants, as were firms that faced larger decreases in sales as a result of the crisis. In **Table 7** and **Table 8**, we estimate linear probability models where the dependent variable is whether a firm applies for direct support (Table 7) or a loan (Table 8) on 2019 firm characteristics. We see that firms with more debt or lower cash holdings in 2019 are more likely to apply for both loans and direct support, but that the relationship is both economically and statistically stronger when it comes to applying for loans. Going from the lowest quintile of net debt relative to turnover to the highest quintile is associated with an 8 percentage-point increase (not statistically significant) in the probability of applying for a grant (compared to a baseline application rate of 54%). In comparison, the same change in net debt to turnover is associated with a 27 percentage-point increase in the probability of applying for a loan, a change that is greater than the baseline application probability.

Table 7: Applications for direct support as a function of 2019 firm characteristics
This table presents the results of an OLS regression (linear probability model) where the dependent variable is a dummy that takes the value of 1 if a firm reported applying for any type of direct support (Business Finland, ELY or municipal). Net debt / turnover and cash / turnover are winsorized (1% both tails), and quintiles are calculated based on the winsorized values. Industry FE refers to industry fixed-effects at the level of self-reported 2-digit industry codes. Number of employees (category) fixed effects refer to fixed effects for self-reported employees in the categories 1, 2-4, 5-9, 10-50, 50-250, 250+. Standard errors clustered at the municipality level are reported in parenthesis.

	(1)	(2)	(3)	(4)
Net debt/turnover - 2019	0.21*			
	(0.11)			
Cash/turnover - 2019			-0.20	
			(0.13)	
Net Debt / Turnover Quintile=2		0.0009		
		(0.06)		
Net Debt / Turnover Quintile=3		0.07		
		(0.07)		
Net Debt / Turnover Quintile=4		0.09		
		(0.07)		
Net Debt / Turnover Quintile=5		0.08		
		(0.08)		
Cash / Turnover Quintile=2				-0.06
				(0.08)
Cash / Turnover Quintile=3				-0.04
				(0.07)
Cash / Turnover Quintile=4				-0.09
				(0.08)
Cash / Turnover Quintile=5				-0.10
				(0.07)
Constant	0.58***	0.51***	0.59***	0.62***
	(0.03)	(0.05)	(0.04)	(0.06)
Industry FE	Yes	Yes	Yes	Yes
Number of employees (category) FE	Yes	Yes	Yes	Yes
N	514	514	517	517
R2	0.121	0.118	0.119	0.119

Table 8: Applications for loans as a function of 2019 firm characteristics
This table presents the results of an OLS regression (linear probability model) where the dependent variable is a dummy that takes the value of 1 if a firm reported applying for a loan. Net debt / turnover 2019 and cash / turnover 2019 are winsorized (1% both tails) while quintiles are calculated based on the winsorized values. Industry FE refers to industry fixed-effects at the level of self-reported 2-digit industry codes. Number of employees (category) fixed effects refer to fixed effects for self-reported employees in the categories 1, 2-4, 5-9, 10-50, 50-250, 250+. Standard errors clustered at the municipality level are reported in parenthesis.

	(1)	(2)	(3)	(4)
Net debt/turnover - 2019	0.35***			
	(0.07)			
Cash/turnover - 2019			-0.42***	
			(0.10)	
Net Debt / Turnover Quintile=2		-0.01		
		(0.05)		
Net Debt / Turnover Quintile=3		0.15***		
		(0.04)		
Net Debt / Turnover Quintile=4		0.22***		
		(0.06)		
Net Debt / Turnover Quintile=5		0.27***		
		(0.05)		
Cash / Turnover Quintile=2				-0.09
				(0.07)
Cash / Turnover Quintile=3				-0.27***
				(0.05)
Cash / Turnover Quintile=4				-0.29***
				(0.05)
Cash / Turnover Quintile=5				-0.30***
				(0.06)
Constant	0.26***	0.11***	0.30***	0.42***
	(0.02)	(0.04)	(0.03)	(0.04)
Industry FE	Yes	Yes	Yes	Yes
Number of Employees Category FE	Yes	Yes	Yes	Yes
N	514	514	517	517
R2	0.114	0.140	0.108	0.156

While the distribution of applications for loans vs. grants may not be optimal from the point-of-view of the government (we do not take a stance on this), the results in this section suggest that within the cross-section of firms, applications for support seem to be in line with need. The fact that firms reporting a larger drop in revenues as well as a weaker 2019 financial position were more likely to apply for support suggests that firms in need were more likely to apply. However, we do not take a stance on whether this is socially optimal from the point of view of moral hazard (firms operating with risky capital structures knowing that they will be able to apply for support) or in terms of discouraging "zombification" of the economy by supporting unviable firms.

4. Conclusion

In this paper, we provide a descriptive analysis of the impact of the coronavirus crisis on Finnish SMEs as of June 2020. We find that while most firms report being affected by the crisis, most also expect to survive through it. We document differences across industries in the impact of the crisis, with hospitality and AER more adversely affected than other industries. The local level of infections is not a strong predictor of the losses faced by firms, other than in the hospitality and AER sectors, though even there the economic magnitude is small.

At the time of the survey, the Finnish government had supported SMEs in two main ways: through loan guarantees and through direct grants. We find that firms were much more likely to apply for grants than loans. We find that firms facing a larger revenue loss as well as firms with high debt / low cash in 2019 were more likely to apply for both grants and loans.

We observe that firms not reporting large drops in sales were significantly less likely to apply for grants, even though these were not technically restricted to any firms. One issue we discuss further in our companion paper (Paaso, Pursiainen and Torstila, 2020) is the relatively low take-up of loans and its implications.

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