ELSEVIER

Does COVID-19 state aid reach the right firms? COVID-19 state aid, turnover expectations, uncertainty and management practices

Jesse Groenewegen [a,b], Sjoerd Hardeman [a,b], Erik Stam [b,c,*]

[a] RaboResearch, Croeselaan 18, 3521 CB, Utrecht, the Netherlands
[b] Utrecht University School of Economics, Kriekenpitplein 21-22, PO Box 80125, 3508 TC, Utrecht, the Netherlands
[c] IMT School of Advanced Studies Lucca, Italy

A R T I C L E I N F O	A B S T R A C T
	A much debated issue in the discussion about COVID-19 state aid to firms is the extent to which these measures keep non-viable firms afloat. What are the characteristics of firms that receive aid and are they viable in the long term? Based on a survey of 1,151 firms in the Netherlands, mainly SMEs, we find that on average, government support goes to better-managed firms and to those with low turnover expectations and high turnover uncertainty. This suggests that COVID-19 state aid tends to go to firms that are most in need of it now and are more likely to be viable in the long term, as indicated by the quality of their management practices.

1. Introduction

Many governments around the world have extended COVID-19 state aid to businesses to minimize the negative effects of COVID-19 and its consequent public health measures on the economy. These COVID-19 business support measures include loan subsidies, financial support of different segments of the business population, tax deferrals and the temporary abolishment of bankruptcy regulation. These measures have saved many firms and jobs in the short term. SMEs were especially helped by these forms of government support, due to their lower cash buffers compared to larger firms, lower uptake of digital tools and technologies, and overrepresentation in industries that were most affected (OECD, 2021). But the historically low bankruptcy rates in many economies have also triggered the question whether these measures have led to the misallocation of resources (e.g. Cros et al., 2021; Gourinchas et al., 2020) and the increase of so-called zombie firms: firms that would have gone bankrupt without the COVID-19 crisis, but that survive due to COVID-19 support. One country that has provided substantial COVID-19 support (approximately 10% of GDP; IMF, 2020), but that seems to have relatively low number of zombie firms is the Netherlands (Lorié and Cubica, 2020). In this paper we perform a microeconometric analysis to find out whether the Dutch government's COVID-19 state aid is well-targeted, in that it reaches firms that are both hard-hit and viable. Helping firms that are hard-hit but not viable would impede the Schumpeterian process of creative destruction and hinder the efficient reallocation of resources (Barrero et al., 2020), whereas helping firm that are viable but not hard-hit would constitute deadweight loss (Santarelli and Vivarelli, 2002).

At the moment, it is still too early to draw definitive conclusions on the basis of administrative data: we do not know which firms that received support turned out to be in most need in the short run and will turn out to be profitable in the longer run. However, using survey data on a representative sample of 1,151 firms in The Netherlands of which 98.59 percent are SMEs (<250 employees), we

---

obtain preliminary evidence on the characteristics of firms that did and did not receive state aid. In particular, apart from collecting information on whether firms did or did not receive state aid, we collected information on the extent to which they were in need of government support and we collected information on their potential longer term viability. The former we measure by asking firms' turnover expectations and uncertainty; the latter we measure by asking questions about the quality of their management practices, a reasonable predictor of a firm's future viability (Bloom and Van Reenen, 2007; Bloom et al., 2019; for an overview of this literature see: Bloom et al., 2014).

Using regression analyses we first find that COVID-19 state aid relatively often ends up at firms that have lower turnover expectations and experience greater uncertainty about their future turnover. This suggests that state aid indeed ends up at firms that are in perceived need most. Second, we find that COVID-19 state aid ends up at firms with better management practices. This suggests that firms receiving state aid are not likely to be less viable on the longer term; much more the contrary. Taken together, these two findings indicate the Dutch COVID-19 state aid is both effective and efficient; it reaches firms in perceived need (effectiveness) and those that are viable in the long run (efficiency).

Our study contributes to the rapidly growing literature on SMEs within the COVID-19 crisis. Previous literature has looked at the (financial) behaviour of SMEs before (Cowling et al., 2020) and during the COVID-19 crisis (Thorgren and Williams, 2020; Giones et al., 2020). Cowling et al. (2020) show that only a minority of SMEs in the UK had accumulated precautionary savings in the run-up to the COVID-19 shock, making government assistance a necessity for many firms to survive the crisis. Thorgren and Williams (2020) find that SMEs in Sweden were likely to slash costs rather than increase debt in order to prevent financial troubles during COVID-19, which has had a negative effect on aggregate demand and investment. Giones et al. (2020) provide a more general framework to guide SME actions, with regard to business planning, resource management and HR management, during and after a large exogenous shock, such as COVID-19.

The goal of our study is to add to this literature on SMEs within the COVID-19 crisis the role of government interventions supporting firms. First, in section 2, we discuss government aid in theory and explain the Dutch support schemes in particular. Then, in section 3, we present our survey data. In section 4 we present the main analyses and discuss our main findings. Finally, in section 5 we conclude.

2. Government aid to firms: theory and practice

2.1. Welfare economics and business support

In line with welfare economics (Harberger, 1971), business support to firms by governments is legitimized when the economy would be worse off without these interventions. Government intervention that is intended to provide net-benefits to the economy via business support is often confronted with several problems. Two well-known problems of government intervention are 'deadweight losses' and 'substitution effects', which are likely to play a role in COVID-19 business support as well. In the medium term, business support can lead to deadweight loss: taxpayers' money may be spent on firms that would have survived the crisis without state aid (Santarelli and Vivarelli, 2002). In the long run, there is a risk of substitution effects: the failure to select viable firms for government aid means that nonviable firms continue to live at the expense of fundamentally viable ones. This hinders the reallocation of production factors (Barrero et al., 2020), and leads to a loss of organizational capital. This intangible form of capital, which consists of firms' organizational routines, practices and social systems, acts as an important lubricant for cooperation between employees and with third parties and ensures that a firm is more than the sum of its parts (Brynjolfsson et al., 2002; Black and Lynch, 2005; Bloom and Van Reenen 2007). This organizational capital disappears when a firm ceases to exist. The question is to what extent the COVID-19 state aid actually reaches firms that need it now (no deadweight loss), and also contributes to the productivity of the economy in the longer term (no substitution effect).

2.2. COVID-19 business support in the Netherlands

In response to the COVID-19 crisis, the Netherlands, like many countries, has set up generous support schemes for firms, in order to prevent a collapse in aggregate demand. Several of these schemes are specifically aimed at incentivizing firms to retain labour. This includes the NOW ("Noodmaatregel Overbrugging Werkgelegenheid") COVID-19 job retention scheme that subsidizes up to 90 percent of labor costs for firms with realized turnover reductions of at least 20 percent. In addition, during the beginning of the crisis the government operated the short-time working scheme (WTV: "WerkTijdVerkorting), which provides extended unemployment benefits conditional on employees remaining employed by their employers. Due to overwhelming demand, this scheme has been superseded by the NOW. Aside from support related to labour costs, the government has also provided SMEs with tax-free allowances to finance fixed costs such as rent (TOGS: "Tegemoetkoming Ondernemers Getroffen Sectoren COVID-19", and TVL: "Tegemoetkoming Vaste Lasten") and has expanded SME credit guarantees, so that small firms can keep access to bank financing more easily (e.g. BMKB: "Borg-stellingsregeling Midden-en KleinBedrijf"). Hard-hit self-employed are eligible for the so-called TOZO ("Tijdelijke Over-bruggingsregeling Zelfstandig Ondernemers") scheme, which provides direct cost-of-living compensation. In addition to these various subsidies, the Dutch government has also expanded eligibility for company tax deferrals. In all, the different business support measures add up to approximately 10% of GDP (IMF, 2020; Rabobank, 2020), but may increase in the future as the second lockdown is extended into 2021.

3. The survey

In order to gain insight into the effectiveness of Dutch COVID-19 state aid, we analysed the characteristics of firms that have received COVID-19 state aid and those that have not received COVID-19 state aid in the period before the second lockdown (starting December 15, 2020). Our research focuses on the business population and not on individual cases of (additional) government aid where national strategic interests apply (see Court of Audit , 2020). We conducted an online survey among 18,352 firms (all clients of one large Dutch bank, the Rabobank) between 22 October and November 9, 2020. Firms were sent an invitation to participate by e-mail and received a link to complete the survey through an online portal. With 1,151 completed responses, the response rate was 6.3 percent. Compared to the entire population of firms in the sectors surveyed, firms in manufacturing (19%) and hospitality (23%) are relatively over-represented in our sample, with wholesale and retail still dominating (58% of the sample); meanwhile, "micro firms" (fewer than 10 employees) are relatively under-represented.

Of the firms surveyed, 52% said they had recently received some form of COVID-19 state aid from the government. This is similar to population-level data collected by Statistics Netherlands (CBS): of all firms with at least two employees, 48% had benefited from at least one of the support measures up to and including September (CBS, 2020). In our dataset, this concerns the NOW scheme (79% of the firms that received aid), the WTV (41%), tax deferral (45%), the BMKB scheme (7%) and other government aid such as the TOZO scheme (9%).

In order to assess the deadweight loss or substitution effects of COVID-19 support to firms, we asked the respondents a number of questions. First of all, we asked firms about their turnover expectations and turnover uncertainty for the next 12 months. These questions were asked before questions on COVID-19 support in the questions sequence, so the inquiry about having received COVID-19 support or not cannot have influenced the answers to the questions on turnover expectations and turnover uncertainty. Both questions were asked on a scale from 1 to 5.[1] The assumption is that when firms with low turnover expectations and high turnover uncertainty are more likely to have received government aid, the risk of deadweight loss is limited. Figs. 2 and 3 show, respectively, the turnover expectations and turnover uncertainty for the sample, both broken down into firms that did and did not receive COVID-19 state aid. It is clear that firms that have received support usually have large negative turnover expectations and experience high levels of uncertainty.

Even though COVID-19 support seems to reach firms that need it relatively more often, still 12% of the firms that received support have high-very high turnover expectations. The share of supported firms with low-very low uncertainty is very small: only 3%.

In order to find out whether the COVID-19 support reaches firms that are viable in the longer term, we asked firms about their management practices. Firms with better management practices generally achieve better business performance (Bloom and Van Reenen 2007; Dieteren et al., 2019). Our survey included a module on management practices, for which we follow Bloom et al. (2020). These questions were copied with minor adjustments from the Management and Organizational Practices Survey (MOPS) and the Annual Survey of Entrepreneurs (ASE). In total, we used 7 questions, listed in Appendix A1. The questions cover personnel practices, the use of key performance indicators, the use of targets, and the handling of issues that arise for the business. Each answer received a score between 0 and 1. The response which is associated with the most structured management practice is set to one, and the one associated with the least structured practices is set to zero. Our overall management score is then the simple average of those seven scores.

Fig. 4 shows the distribution of management scores among the firms in our sample, broken down into firms that did and did not receive COVID-19 state aid. On average, the management score is 0.4 on a scale from 0 to 1. This corresponds with the average from a previous study into the quality of management practices in the Netherlands using a survey with similar questions (Dieteren et al., 2019). Firms that have received government aid appear to have better management practices than firm that have not received government aid.

4. Results

Using logistic regression analyses, we examine the relationship between whether or not firms have received COVID-19 state aid and the variables indicating possible deadweight loss and substitution effects (Table 1). In all models we include respondent controls (respondent age, gender, role within the firm and time taken to complete the survey) and general firm controls (firm ownership type, firm age). In model 1 we see that government aid is more likely to reach larger firms and firms in the wholesale and retail sector.[2] In model 2, we add turnover expectations and uncertainty to the specification. We do this to check whether the aid ends up with firms that most need it in the short term. Both effects are significant and have the expected sign: firms with low turnover expectations and high uncertainty are more likely to receive COVID-19 state aid.[3] This might imply that deadweight loss is limited. Also note that the sector in

---

[1] In the final regression, we reduce the number of categories for both turnover expectations and turnover uncertainty from 5 to 3. As can be seen in Figs. 2 and 3, there are relatively few observations in some of the categories. Also, as mentioned in the regression table notes, the interpretation of the results does not change when including five categories rather than 3.

[2] We have three sectors in our sample: manufacturing, wholesale and retail, and hospitality. The wholesale and retail sector is the reference category in our model.

[3] Note that the difference between the coefficients of neutral and positive turnover expectations variables themselves is not significant. The difference between negative and neutral, and negative and positive turnover expectations is positive and significant, however, as shown in Table 1, meaning that negative turnover expectations imply a greater likelihood of state aid.

Table 1
Logistic regression analysis with a binary COVID-19 state aid indicator as dependent variable.

	(1)	(2)	(3)	(4)
Quality of management practices			1.220***	
			(0.455)	
Quality of management practices (excl. HR)				1.103**
				(0.440)
Neutral turnover expectations		−1.169***	−1.197***	−1.198***
		(0.186)	(0.197)	(0.198)
Positive turnover expectations		−1.045***	−1.334***	−1.331***
		(0.262)	(0.294)	(0.295)
Medium uncertainty		0.962***	0.916***	0.929***
		(0.235)	(0.268)	(0.268)
High uncertainty		1.893***	1.927***	1.943***
		(0.235)	(0.267)	(0.266)
Log number of employees	0.196***	0.207***	0.121*	0.147**
	(0.051)	(0.055)	(0.070)	(0.067)
Hospitality sector dummy	−0.131	−0.057	−0.133	−0.127
	(0.159)	(0.186)	(0.203)	(0.203)
Manufacturing sector dummy	−0.299**	−0.156	−0.289	−0.287
	(0.147)	(0.166)	(0.182)	(0.182)
Firm controls	Y	Y	Y	Y
Respondent controls	Y	Y	Y	Y
Constant	0.592	0.036	−0.213	−0.213
	(0.603)	(0.780)	(0.830)	(0.828)
Number of observations	1,084	1,035	884	884
Pseudo R-squared	0.030	0.178	0.198	0.197

Note: Models contain the results of logistic regression analyses with Robust Standard Errors in parentheses (***p < 0.01, **p < 0.05, *p < 0.1). The sector reference category is retail. The five answer categories for turnover expectations and turnover uncertainty have been reduced to three dummy variables each. For turnover expectations the middle three categories have been bundled; for turnover uncertainty both outer two categories. The interpretation of the results does not change when working with 5 categories rather than 3: the likelihood of state aid increases with higher uncertainty and lower turnover expectations. In all models we account for other firm controls (ownership and firm age) and respondent controls (age, gender, responsibility within the firm, and time taken to complete the survey). The number of observations differs per model due to missing observations for some variables (i.e. turnover expectations and uncertainty in model 2, and management in models 3 and 4). The results do not change if we use the most parsimonious dataset of 884 observations for models 1 and 2 as well.

which a firm operates no longer has a significant impact on the probability of receiving COVID-19 state aid; apart from the fact that some sectors are hit harder than others in general in terms of turnover and uncertainty, there is no additional sector effect left once we take into account the turnover expectations and uncertainty.

Finally, in models 3 and 4 we add management quality. The quality of management practices has a positive and significant effect on the probability that a firm received COVID-19 state aid, on top of the effects of turnover expectations and uncertainty.[4] This indicates that the COVID-19 state aid also ensures the retention of organizational capital, as it on average reaches firms with high quality of management practices. As a result, the substitution effects are also limited. The significant effect of management comes at the expense of the significance of the effect of firm size. Management quality and firm size are strongly related, as we also know from earlier research (Bloom and Van Reenen, 2007; Dieteren et al., 2019), but the latter does not eliminate the effect of management quality.

One concern with measuring the quality of management practices is that not all practices might apply to all kind of firms. In particular, HR management practices might not be relevant for micro firms (<10 employees). Bloom et al. (2020) therefore suggest to leave out these practices when assessing micro firms' quality of management practices. While target and performance management (setting clear and reachable targets and monitoring and anticipating on their progress) are likely to be relevant for all kind of firms, HR practices make less sense within firms that employ few people. Model 4 presents the results of the same analysis performed in model 3 but now excludes HR practices in our measure of management quality. The results from model 4 are very much in line with the results from model 3: on top of the effects of turnover expectations and uncertainty, the quality of management practices has a positive and significant effect on the probability that a firm received COVID-19 state aid.

5. Conclusion

Our empirical analysis of the effectiveness of COVID-19 state aid shows that this support mainly reaches firms that need it in the short term because of poor turnover prospects, and which, on average, are likely to be viable in the longer term as measured by the quality of their management practices. The degree of deadweight loss and substitution effects in government aid therefore seems to be

---

[4] To address multicollinearity concerns, between turnover expectations and management quality, we perform an ANOVA test to check if the different turnover expectation baskets have different average management quality. The differences are not statistically significant. In other words, there is no unconditional correlation between management quality and turnover expectations, and hence no multicollinearity.

limited in the Netherlands.

The question is, however, whether the lack of deadweight loss and substitution effects and the preservation of organizational capital so far are the result of targeted policies or are merely a coincidence. Should the latter be the case, the current design of COVID-19 state aid does not in any way guarantee that subsequent support measures will ensure the preservation of organizational capital. This would require an explicit assessment of whether firms eligible for COVID-19 state aid have high quality management practices and thereby good organizational health. This could prevent the substitution effects mentioned before. Organizational capital seems to be easier to measure as an indicator of the viability of firms than, for example, the extent to which they manage to achieve the most profitable product-market combinations in the next three years. In addition, our analyses are based on turnover expectations: the realized turnover may be more favourable than expected, leading to deadweight losses of the COVID-19 state aid. To remedy dead-weight losses related to COVID-19 state aid, governments could set up a mechanism through which firms can quickly repay aid when it turns out they do not need it.

It also appears that the likelihood of state support is correlated with firm size, controlling for turnover prospects and quality of management practices. Larger firms are more likely to receive aid, ceteris paribus. This implies that smaller firms with equal turnover prospects and quality of management practices are less likely to apply for or be granted aid. To find out why this is the case, and whether institutional barriers prevent smaller firms from benefiting from state aid, more research is needed.

Declaration of competing interest

None.

Acknowledgments

Appendix A1. Survey questionnaire

In the survey firms were asked to respond to a module on management practices. The questions were copied with minor adjustments from the Management and Organizational Practices Survey (MOPS) and the Annual Survey of Entrepreneurs (ASE) (see: Bloom et al., 2020):

1. How many key performance indicators (KPIs) are monitored at your business?
    a. None
    b. 1 or 2
    c. 3 to 9
    d. 10 or more
2. How frequently are KPIs typically reviewed at your business?
    a. Never
    b. Annually
    c. Quarterly
    d. Monthly
    e. Weekly
    f. Daily
    g. Multiple times per day
3. What did you do when a service or production problem arises in your business?
    a. No action is taken
    b. The problem is solved but no further action is taken
    c. The problem is solved and action is taken so that the problem does not occur again
    d. The problem is solved, action is taken so that the problem does not occur again and a continuous improvement effort is undertaken to identify similar problems in advance
4. What describes the time frame of your service/production targets?
    a. Emphasis is on short-term targets (less than one year)
    b. Emphasis is on long-term targets (more than one year)
    c. Emphasis is on a combination of short-term and long-term targets
    d. There are no targets
5. How easy or difficult is it to achieve service, or production targets?
    a. Without too much effort
    b. With some effort
    c. With an average amount of effort
    d. With an above average amount of effort
    e. With an extraordinary amount of effort
6. What are the primary ways employees are promoted in your business?

  a. N/a. Employees are normally not promoted
  b. On the basis of factors other than performance and skills (e.g. tenure or personal connections)
  c. Partly on the basis of performance and skills, partly on the basis of other factors (e.g. tenure or personal connections)
  d. On the basis of performance and skills
7. When is an under-performing employee reassigned or dismissed?
  a. Rarely or never
  b. More than six months after underperformance has been identified
  c. Less than six months after underperformance has been identified
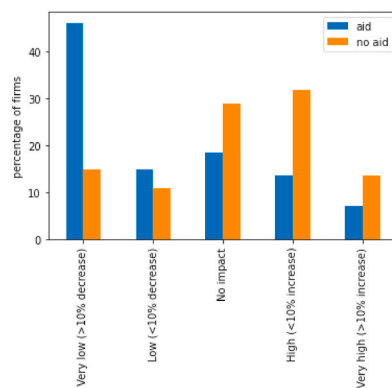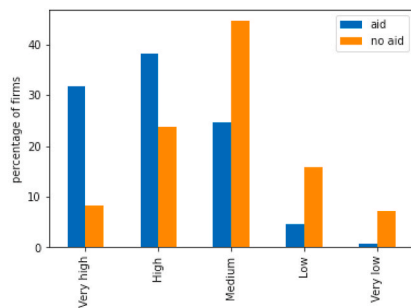
Appendix A2. descriptives
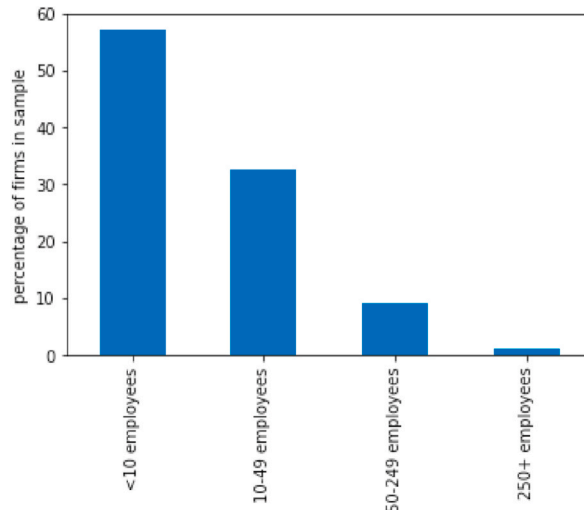
Fig. 1. Size distribution of sample

Note: The Mann-Whitney U-test shows that firms which have not received Covid-19 government aid have significantly higher revenue expectations than firms that have received aid (z = 12,46).

Fig. 2. Comparison of turnover expectations between firms that have (blue) and have not (orange) received state aid

Note: The Mann-Whitney U-test shows that firms which have not received Covid-19 government aid experience
significantly lower turnover uncertainty than firms that have received aid (z = -14,52)

Fig. 3. Comparison of turnover uncertainty between firms that have (blue) and have not (orange) received state aid
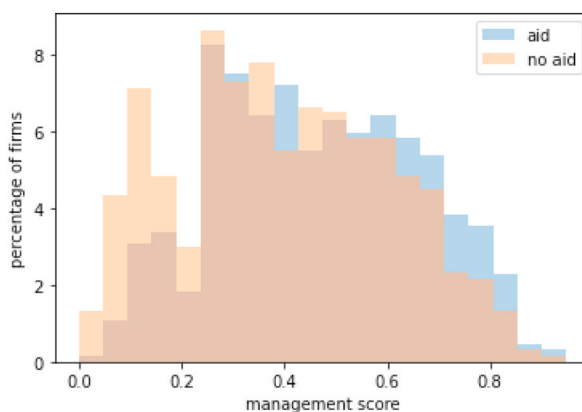

Fig. 4. Overlapping histograms of the quality of management practices of firms that did (light blue) and did not (light orange) receive government aid

Author statement

Jesse Groenewegen: Conceptualization; Methodology; Formal analysis; Investigation; Writing, Sjoerd Hardeman: Conceptualization; Methodology; Formal analysis; Investigation; Writing, Erik Stam: Conceptualization; Writing; Supervision.

References

Barrero, J.M., Bloom, N., Davis, S.J., 2020. Covid-19 Is Also a Reallocation Shock. National Bureau of Economic Research. No. w27137.

Black, S.E., Lynch, L.M., 2005. Measuring organizational capital in the new economy. In: Measuring Capital in the New Economy. University of Chicago Press, pp. 205–236.

Bloom, N., Brynjolfsson, E., Foster, L., Jarmin, R., Patnaik, M., Saporta-Eksten, I., Van Reenen, J., 2019. What drives differences in management practices? Am. Econ. Rev. 109 (5), 1648–1683.

Bloom, N., Fletcher, R., Yeh, E., 2020. Does manager forecasting matter? Downloaded at: https://nbloom.people.stanford.edu/sites/g/files/sbiybj4746/f/forecastng_0.pdf.

Bloom, N., Lemos, R., Sadun, R., Scur, D., Van Reenen, J., 2014. JEEA-FBBVA Lecture 2013: the new empirical economics of management. J. Eur. Econ. Assoc. 12 (4), 835–876.

Bloom, N., Van Reenen, J., 2007. Measuring and explaining management practices across firms and countries. Q. J. Econ. 122 (4), 1351–1408.

Brynjolfsson, E., Hitt, L.M., Yang, S., 2002. Intangible assets: computers and organizational capital. Brookings Pap. Econ. Activ. (1), 137–181.

CBS, 2020. Gebruik Van Steunmaatregelen Corona Per 30 September, 14 November 2020. Downloaded at: https://www.cbs.nl/nl-nl/maatwerk/2020/46/gebruik-van-steunmaatregelen-corona-per-30-september.

Court of Audit (Algemene Rekenkamer), 2020. Individuele steun aan bedrijven tijdens de coronacrisis. Zijn de lessen uit het verleden toegepast? Den Haag: Algemene Rekenkamer.

Cowling, M., Brown, R., Rocha, A., 2020. Did you save some cash for a rainy COVID-19 day? The crisis and SMEs. Int. Small Bus. J. 38 (7), 593–604.

Cros, M., Epaulard, A., Martin, P., 2021. Will schumpeter catch covid-19? Covid Economics 70 (25 February 2021), 49–69.

Dieteren, J., Groenewegen, J., Hardeman, en S., 2019. Gericht beleid nodig voor verbeteren managementkwaliteit bij bedrijven. Econ. Stat. Ber. 104 (4749), 524–526.

Giones, F., Brem, A., Pollack, J.M., Michaelis, T.L., Klyver, K., Brinckmann, J., 2020. Revising entrepreneurial action in response to exogenous shocks: considering the COVID-19 pandemic. Journal of Business Venturing Insights 14, e00186.

Gourinchas, P.O., Kalemli-Özcan, Ş., Penciakova, V., Sander, N., 2020. Covid-19 and SME Failures. NBER Working Paper w27877.

Harberger, A.C., 1971. Three basic postulates for applied welfare economics: an interpretive essay. J. Econ. Lit. 9 (3), 785–797.

IMF, 2020. Fiscal monitor database of country fiscal measures in response to the COVID-19 pandemic. Downloaded at: https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19.

Lorié, J., Ciobica, I., 2020. Coronasteun houdt vaak ook niet-levensvatbare bedrijven overeind. Econ. Stat. Ber. 105 (4790), 8 oktober 2020.

OECD, 2021. "An In-Depth Analysis of One Year of SME and Entrepreneurship Policy Responses to COVID-19: Lessons Learned for Moving Forward", OECD SME and Entrepreneurship Papers, Forthcoming. OECD Publishing, Paris.

Rabobank, 2020. COVID-19 policy response: spend or lend? Downloaded at: https://economics.rabobank.com/publications/2020/october/covid-19-policy-response-spend-or-lend/.

Santarelli, E., Vivarelli, M., 2002. Is subsidizing entry an optimal policy? Ind. Corp. Change 11 (1), 39–52.

Thorgren, S., Williams, T.A., 2020. Staying alive during an unfolding crisis: how SMEs ward off impending disaster. Journal of Business Venturing Insights 14, e00187.