



BANCA D'ITALIA  
EUROSISTEMA

# Questioni di Economia e Finanza

(Occasional Papers)

Financial support measures and credit to firms  
during the pandemic

by Stefania De Mitri, Antonio De Socio, Valentina Nigro and Sabrina Pastorelli

December 2021

Number

665





BANCA D'ITALIA  
EUROSISTEMA

# Questioni di Economia e Finanza

(Occasional Papers)

Financial support measures and credit to firms  
during the pandemic

by Stefania De Mitri, Antonio De Socio, Valentina Nigro and Sabrina Pastorelli

Number 665 – December 2021

*The series Occasional Papers presents studies and documents on issues pertaining to the institutional tasks of the Bank of Italy and the Eurosystem. The Occasional Papers appear alongside the Working Papers series which are specifically aimed at providing original contributions to economic research.*

*The Occasional Papers include studies conducted within the Bank of Italy, sometimes in cooperation with the Eurosystem or other institutions. The views expressed in the studies are those of the authors and do not involve the responsibility of the institutions to which they belong.*

*The series is available online at [www.bancaditalia.it](http://www.bancaditalia.it).*

ISSN 1972-6627 (print)

ISSN 1972-6643 (online)

*Printed by the Printing and Publishing Division of the Bank of Italy*

# FINANCIAL SUPPORT MEASURES AND CREDIT TO FIRMS DURING THE PANDEMIC

by Stefania De Mitri\*, Antonio De Socio\*, Valentina Nigro\* and Sabrina Pastorelli\*

## Abstract

The COVID-19 pandemic has led to an abrupt disruption of economic activity. A wide range of support measures have been introduced to help firms, including public loan guarantees to ease access to credit and debt moratoria to relieve their liquidity needs. This study explores the main features of the firms that had access to these initiatives in the year starting in March 2020. The liquidity crisis has prompted many companies to apply for both, especially in the sectors hit hardest by the pandemic (trade, accommodation and food services). Medium-sized and mid-cap companies, for which access to public guarantees has been extended, have resorted to guaranteed loans extensively. Access to state-backed loans has been wider for financially solid companies; recourse to moratoria has been higher for financially vulnerable firms. Overall, government measures have supported credit during the pandemic; only for large businesses, financing has increased also for those not resorting to guarantees. This evidence suggests that without the support measures, credit restrictions would have been severe also for larger companies.

**JEL Classification:** G32, H81.

**Keywords:** COVID-19 pandemic, support measures, indebtedness, riskiness.

**DOI:** 10.32057/0.QEF.2021.0665

## Contents

1. Introduction .....	5
2. Data .....	6
3. Credit dynamics and the role of public guarantees .....	7
4. Public guaranteed loans and moratoria by firms' characteristics.....	10
4.1. Public guaranteed loans .....	10
4.2. Moratoria.....	11
5. Probability of access to public guarantee schemes .....	13
6. Conclusions .....	15
Appendix .....	17
References .....	29

---

\* Bank of Italy, Directorate General for Economics, Statistics and Research. The views expressed herein are those of the authors and do not necessarily reflect those of the Bank of Italy.



## 1. Introduction

The COVID-19 pandemic has set off a severe shock that is unmatched in modern times. The abrupt disruption of economic activity triggered a sudden fall of business revenues and significant liquidity strains, which hindered the ability of firms to finance their running costs via operating cash flows (Banerjee et al., 2020). The pandemic crisis unleashed a multi-front policy effort to react swiftly to this unparalleled challenge (Demmou et al., 2020; OECD, 2020; Anderson et al., 2021). A wide range of support measures were introduced to help firms, including public loan guarantees to ease access to new financing, and debt moratoria to relieve their liquidity needs (Visco, 2020).

The paper explores the main features of the Italian enterprises that had access to financial support initiatives – namely guaranteed loans and moratoria – in the twelve months starting in March 2020. Public guarantee schemes were especially relevant in view of the large number of operations and the amount of credit disbursed. The analysis dwells on sectors hardest hit by the pandemic, due to stricter lockdown policies, and on small and medium-sized enterprises (SMEs), typically more financially fragile and with limited cash buffers to weather the disruption caused by the spread of the virus.

Several interesting results stand out from the analysis. Government measures have played a key role in shaping credit dynamics after the pandemic, marked by a sustained growth in long-term loans. Against a reduction in loans of almost 2 and 7 per cent during the 2009 and the 2012-2013 recessions, respectively, overall corporate credit increased by around 8.5 per cent in 2020; the upward trend largely reflected the take-up of loans backed by public guarantees.

Among the beneficiaries of guaranteed loans, individual firms and micro-enterprises have had a prominent role. The growth in their financing doubled that of medium-sized and mid-cap companies; only for large firms long-term financing increased even for those borrowers that did not resort to guarantees. This evidence suggests that, in absence of support measures, the severity of the crisis would have hampered access to credit for small businesses and would likely have resulted in credit restrictions also for medium-sized and mid-cap companies.

The liquidity crisis caused by the pandemic has prompted many firms to apply for both guaranteed loans and moratoria, most likely trying to address immediate financial needs and with a view to building up precautionary liquidity buffers in times of high uncertainty. The support measures have focused particularly on the main sectors impacted by the emergency (trade, accommodation and food services). Medium-sized and mid-cap companies, for which access to public guarantee schemes has been extended, have extensively resorted to guaranteed loans: nearly 30,000 companies have benefitted from them, more than 60 per cent of firms of this size.

Access to public guarantees has been wider for financially stronger companies. This result holds when taking into account both risk measures of a pre-pandemic fragility (presence of non-performing loans) and prospective financial vulnerability indicators, estimated through the Bank of Italy's microsimulation model.<sup>1</sup> Conversely, recourse to moratoria has been higher for vulnerable firms.

---

<sup>1</sup> The model identifies vulnerable enterprises only among those present in the Cerved dataset. Enterprises with a negative EBITDA or a ratio of net interest expense to EBITDA of more than 50 per cent are defined as vulnerable. Enterprises with bad loans are excluded; see De Socio and Michelangeli (2017).

The remainder of the paper proceeds as follows. Section 2 depicts the datasets exploited in the analysis. Section 3 explores the role of public guarantees in shaping the overall trends of credit to firms. Section 4 delves into the characteristics of the enterprises that benefitted from the support measures. Section 5 provides estimates of the likelihood of accessing the main facility, i.e. guaranteed loans, by comparing the features of the beneficiary firms with those of the companies which did not resort to this measure. Section 6 concludes. The legislative framework is described in the Appendix A.

## 2. Data

The analysis is based on a unique dataset containing firm-level information from many different sources. First, we exploit data on all state-guaranteed loans between March 2020 and March 2021 provided by the Central Guarantee Fund (CGF) for SMEs and SACE. Second, information on total credit are based on the Central Credit Register (CCR), operated by the Bank of Italy, which includes all loans exceeding EUR 30,000 granted to producer households and non-financial firms by all financial intermediaries. Third, data on moratoria are based on the only source available, AnaCredit, the harmonized and granular data collected by the European national central banks on loans and collateral extended to legal entities. Finally, these databases have been integrated with the number of employees provided by the National Social Insurance Agency (Istituto Nazionale della Previdenza Sociale, INPS), and with balance sheet data from Cerved, a proprietary database containing the financial reports of all Italian limited liability entities.

The main advantage of our analysis is the inclusion of the universe of firms that obtained state-guaranteed loans from the CGF and SACE; therefore the coverage is wider compared to the alternative one (AnaCredit). Indeed, the latter does not include relevant information along three dimensions: a) producer households; b) the credit granted by smaller banks or other financial intermediaries; c) loans below EUR 25,000.

Table 1 shows the total number of companies whose information is available in at least one database (around 3 million). As 600,000 firms had bad loans in March 2020,<sup>2</sup> we consider in our analysis only the remaining ones, equally split between enterprises that obtained at least one state-guaranteed loan (approved by the CGF or SACE) and all the others.

---

<sup>2</sup> Due to eligibility criteria these firms cannot access the support measures (see the Appendix A).

Table 1. Number of firms included in the dataset (Mar. 2020 – Mar. 2021)

	# of firms with public guaranteed loans				# of firms without public guaranteed loans (*)	Total # of firms (*)	of which: in the CCR (*)	Memo: # of total firms (including those with bad loans)
	only CGF	both CGF and SACE	only SACE	total (CGF or SACE)				
Sole proprietorship	594,410	0	0	594,410	358,630	953,040	494,345	1,206,264
Micro	502,284	3	2	502,289	726,912	1,229,201	682,991	1,568,170
Small	108,809	14	6	108,829	74,995	183,824	148,713	187,850
Medium	22,103	153	5	22,261	14,220	36,481	31,631	37,080
Mid-cap (**)	6,757	393	67	7,217	2,732	9,949	9,359	10,002
Large	0	0	243	243	1,358	1,601	1,458	1,623
<b>Total</b>	<b>1,234,363</b>	<b>563</b>	<b>323</b>	<b>1,235,249</b>	<b>1,178,847</b>	<b>2,414,096</b>	<b>1,368,497</b>	<b>3,010,989</b>

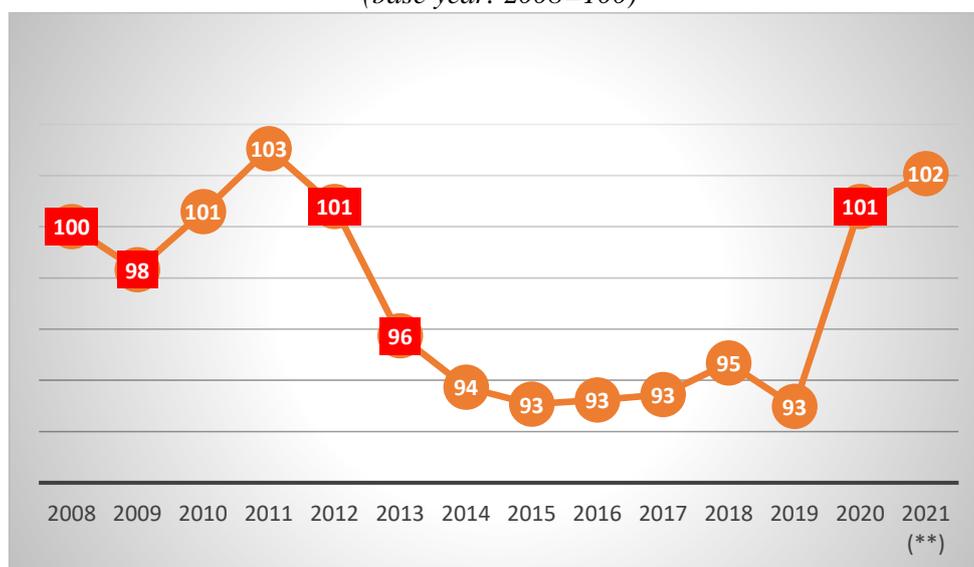
Source: CGF, SACE, CCR, Cerved. Firms without state-guaranteed loans include those with available credit in the CCR or those recorded in Cerved. See the Appendix B for the definition of firm size. (\*) Firms with bad loans in March 2020 are excluded. (\*\*) Among large firms, mid-caps have between 250 and 499 employees.

### 3. Credit dynamics and the role of public guarantees

The section shows in detail the dynamics of credit to firms since March 2020, focusing on the role of guaranteed loans (ECB, 2020).

This measure represented a key factor in the increase in credit flows to firms, a striking difference compared to the previous two crises, when bank lending to firms shrank (by 2 per cent in 2009 and 7 per cent overall in 2012-13); during the pandemic, conversely, it rose by more than 8 per cent (Figure 1).

Figure 1. Bank loans to non-financial firms (\*)  
(base year: 2008=100)

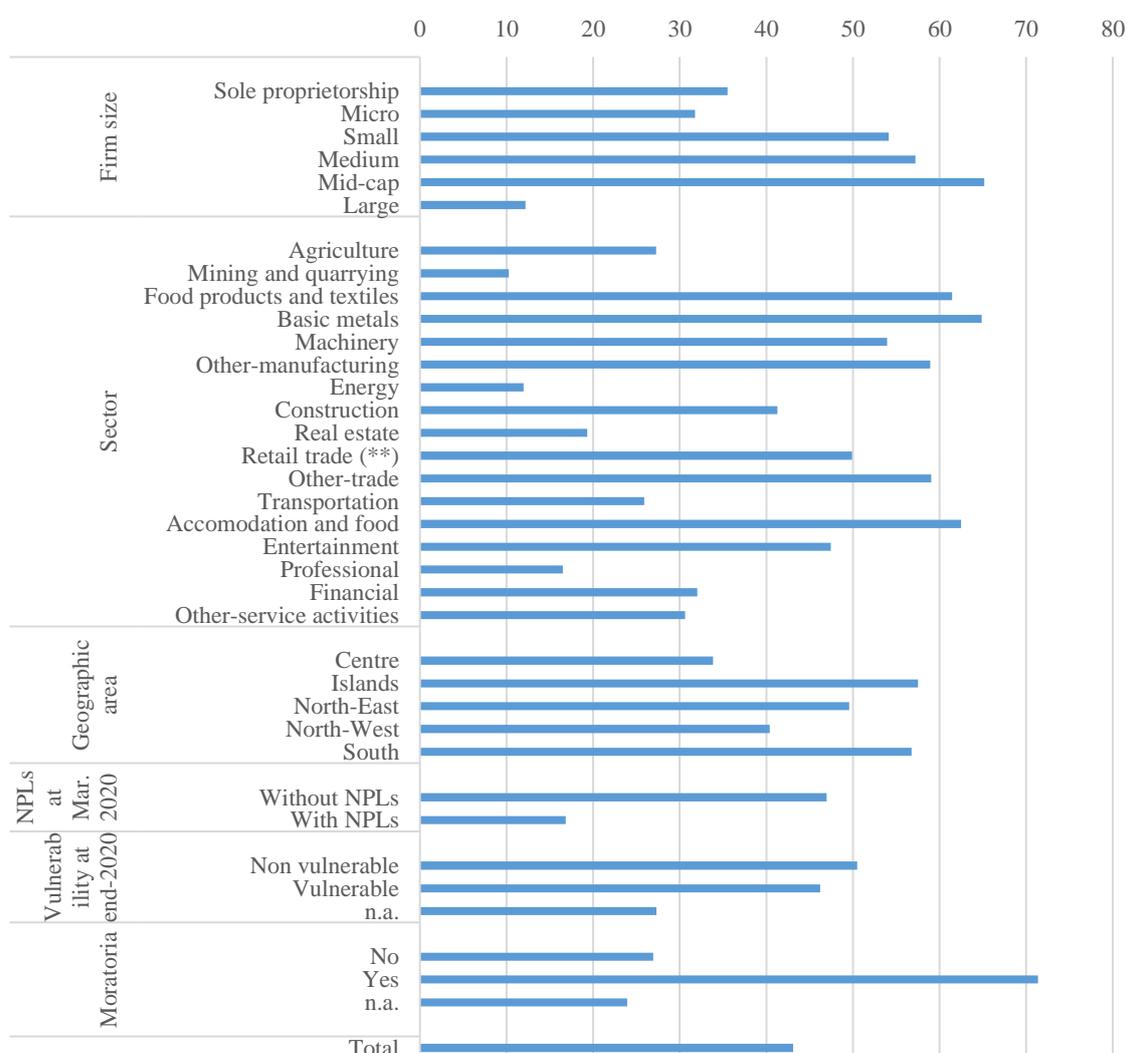


Source: Supervisory reports. (\*) Producer households and the Deposits and Loans Fund (Cassa Depositi e Prestiti) are included. Recessionary/crisis years are shown in red. (\*\*) Data for 2021 refer to July.

In order to better evaluate the effects of public guaranteed loans on credit dynamics we show the weight of the beneficiaries in terms of total credit granted before the pandemic. We include all firms with available information in the CCR, except those with bad loans in March 2020 (more than 1.3 million companies; Table 1, second last column). Around 47 per cent of firms with a state-backed loan are not recorded in the CCR; however, their share on total credit is quite low (less than 10 per cent).

Figure 2 highlights the percentage of total credit (regardless of guarantees) granted in March 2020 to companies that obtained a state-backed loan in the following twelve months. The average share is 43 per cent. Higher percentages (larger than 60 per cent) are recorded among mid-cap companies, in the manufacturing of metals, food and textiles, and in the accommodation and food services. The share is particularly high for firms that also obtained a moratorium (71 per cent), suggesting a wide recourse to both measures (see sections 4.2 and 5).

Figure 2. Total credit granted to firms with state-guaranteed loans in March 2020 (\*)  
(per cent)



Source: CGF, SACE and CCR. (\*) Credit granted refers to the entire amount, including state-guaranteed loans. Percentages are calculated on the total credit granted to firms in each category. (\*\*) Retail trade, except for motor vehicles and motorcycles.

The overall credit dynamics was influenced by both the availability of state guarantees and a shift in the relative shares of short- and long-term debt (Figure 3.a). Including all the firms recorded in the CCR, the change in credit between March 2020 and March 2021 amounted to EUR 75 billion (7 per cent of credit granted in March 2020), due to an increase in long-term debt by EUR 106 billion (19 per cent) and a decrease in short-term debt by EUR 31 billion (-7 per cent). The growth of the former is entirely due to firms that obtained a public guarantee (their loans increased by almost EUR 106 billion), while short-term debt shrank for both type of companies (-12 and -19 EUR billion for those that obtained or not a guarantee, respectively).

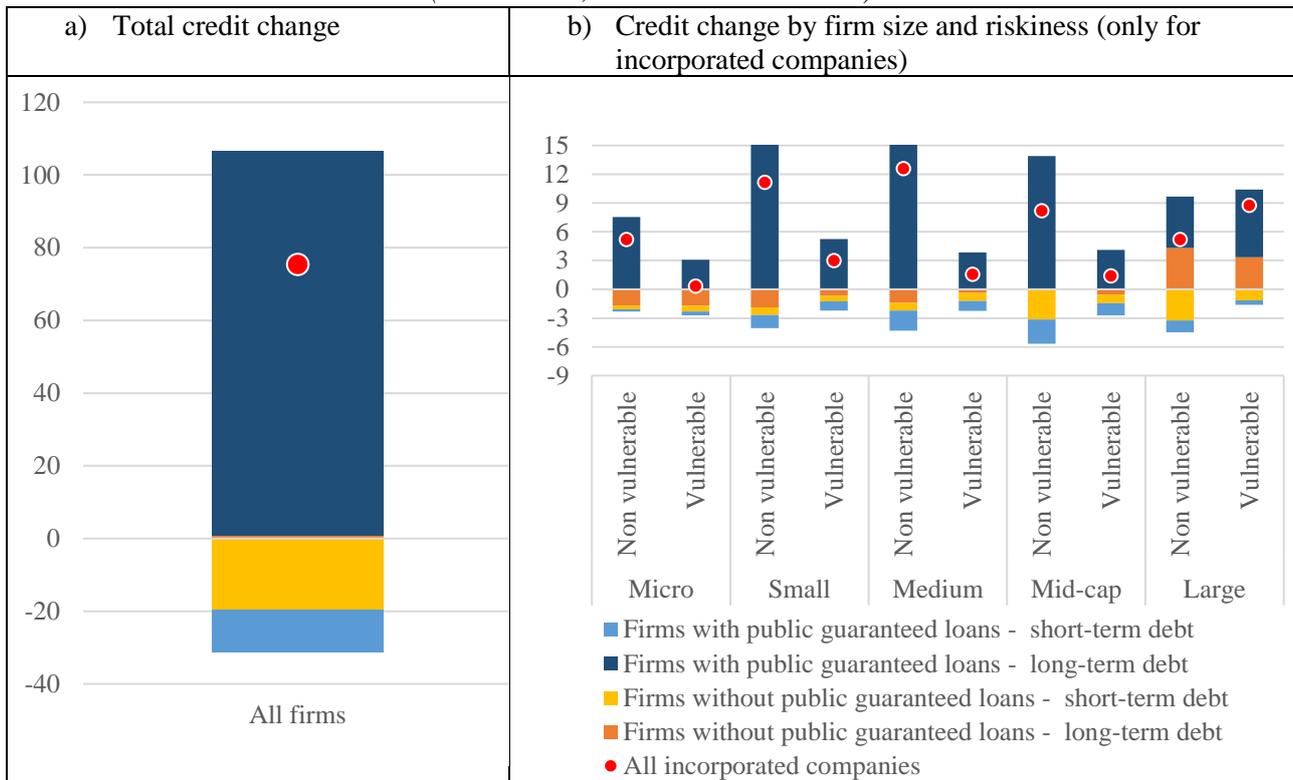
This trend is common across almost all types of firms, that is distinguishing companies according to structural features (size, sector of economic activity, geographical area), riskiness or access to a moratorium (table A1 in the Appendix C). Among firms which obtained collateralised loans, the growth of total credit has been particularly high for sole proprietorships and micro-firms (31 per cent); this increase is nearly double compared to medium-sized companies and mid-caps.

The access to public guaranteed loans, which usually displays longer maturity, drove both the high growth in the overall debt and the increase in the share of long-term debt. The latter, however, is not entirely due to the effect of the measure, as it also applies to large companies without guaranteed loans, whose long-term credit increased. It could be related to firms' preference to have a more stable source of funding in periods of high uncertainty.

Among incorporated companies, which contributed largely to the overall credit growth (58 billion out of 75), vulnerable firms obtained around 26 per cent of loans. There are however substantial differences between large firms and the others (Figure 3.b). The former ones, both vulnerable and sound, experienced a sustained increase in long-term debt, even when they did not obtained public guarantees; for the other firms, instead, credit grew only for the rise of long-term state-backed loans.

This evidence, even if based on aggregate data, suggests that the strengthening of the CGF role and the existence of public and private moratoria supported access to credit for smaller firms, structurally dependent on bank loans. Also medium-sized firms and mid-caps would have been hit by a credit crunch without public intervention. Their introduction was thus paramount to support a large part of the productive system.

Figure 3. Change in credit granted  
(EUR billion, Mar. 2020- Mar. 2021)



Source: CGF, SACE, CCR and Cerved. Vulnerability is referred to the end of 2020; see footnote 1 for further details. Public guaranteed loans include only those backed by CGF or SACE.

#### 4. Public guaranteed loans and moratoria by firms' characteristics

##### 4.1. Public guaranteed loans

State-guaranteed loans approved by the CGF or SACE between March 2020<sup>3</sup> and March 2021 amounted to over EUR 165 billion, around 16 per cent of the total funds granted to companies without bad loans before the outbreak of the pandemic.

The beneficiaries were mainly very small enterprises (more than one million of sole proprietorships and micro-enterprises) with guaranteed loans amounting to just over EUR 45 billion, of which almost half were fully guaranteed (Table A2 in the Appendix C). Overall, the financing concentrated on other size classes (Figure A1 in the Appendix C, Panel a), reflecting the widening in the access to guaranteed funds to large companies through the SACE 'Guarantee Italy' instrument and the issuance of guarantees by the CGF to mid-caps.

In particular, the activity of the CGF has recorded a drop in guaranteed loans addressed to small firms, from 46 per cent before the crisis to 29 per cent during the pandemic, and an increase for the

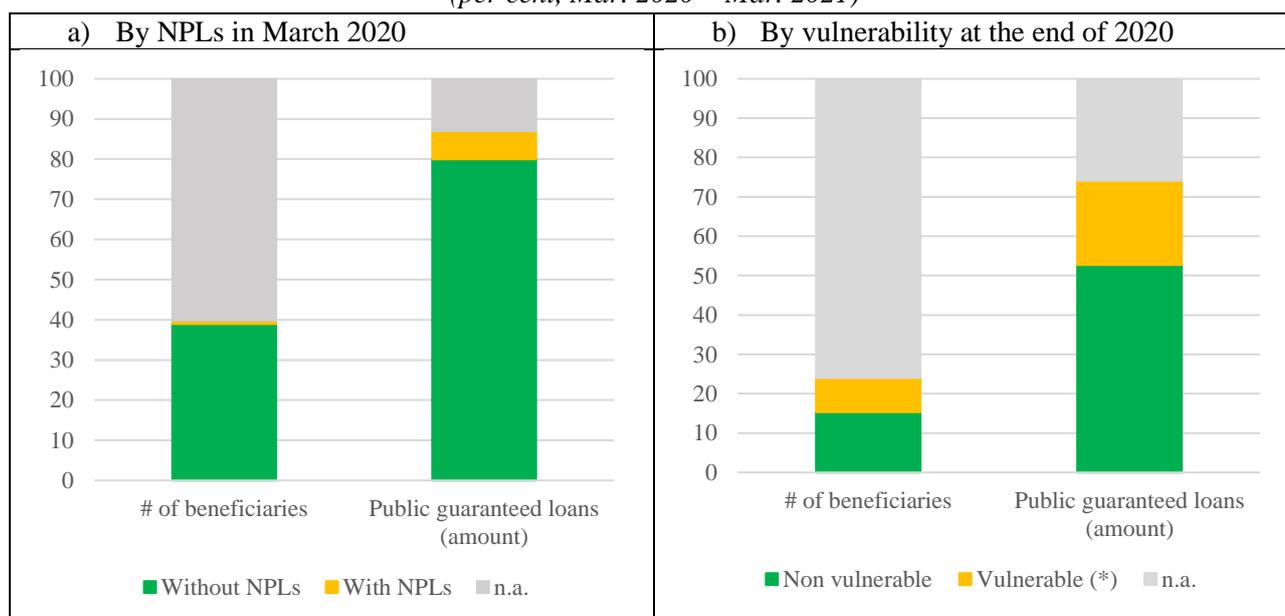
<sup>3</sup> The application for guarantees received by the CGF after the 'Cure Italy' decree has been approved only from 25 March 2020; state-backed loans related to the month of March amount to some EUR 500 million.

mid-caps, which reached 15 per cent (compared to virtually nil in 2019). The share allocated to sole proprietorships and micro-enterprises increased slightly (from 26 to 32 per cent).

The beneficiaries were concentrated mainly in the sectors most affected by the crisis – trade, accommodation and food service activities and construction – and in the areas of the North-West, the South and the Islands (Figure A1 in the Appendix C, Panels b – c).

Firm riskiness is assessed through the use of two different indicators. The first one, based on the presence of non-performing loans in March 2020, identifies companies with financial weaknesses even before the crisis.<sup>4</sup> The second one, more forward-looking and calculated with the microsimulation model of the Bank of Italy, detects those companies with possible difficulties in bearing the service of debt prospectively. Public guarantees have been concentrated among companies with stronger financial conditions. Indeed, state-backed loans were granted almost entirely to companies without non-performing loans at the outbreak of the pandemic (Figure 4, Panel a). According to the microsimulation model projections, the share of guaranteed funding was largely channelled to non-vulnerable companies (Figure 4, Panel b).

Figure 4. Access to public guaranteed loans by firm riskiness  
(per cent, Mar. 2020 – Mar. 2021)



Source: CGF and SACE for guaranteed loans; CCR and Cerved for the classification of enterprises with NPLs or vulnerabilities. (\*) For the definition of vulnerable enterprises based on the microsimulation model, see footnote 1.

#### 4.2. Moratoria

According to the weekly survey carried out by the Bank of Italy, the amount of loans subject to a moratorium (both *ex lege* and privately granted) is significant. Until March 2021, the total value of outstanding debt was estimated at EUR 187 billion related to about 1.2 million applications, largely

<sup>4</sup> Before the entry into force of L. 40/2020 in June, companies with NPLs could not access the loans assisted by the CGF. The financing approved by the Fund up to that date amounted to approximately EUR 15 billion, 9 per cent of the total amount guaranteed by the Fund from March 2020 to March 2021.

approved.<sup>5</sup> Access to the moratoria was concentrated in the spring of 2020 and mainly concerned the suspension of loan instalments.

To obtain information at firm level we relied on the granular data from AnaCredit. We included all firms that had a moratoria since March 2020, without excluding those that may have also chosen to resume payments or whose suspensions have come to an end. Overall, the companies benefitting from the moratorium were about 300,000 for EUR 100 billion of outstanding debt.<sup>6</sup> More than two-thirds of the suspended loans were concentrated between micro-enterprises and around 40 per cent in the trade sector and accommodation and food service activities.

The companies that have requested a moratorium are likely to have run into payment difficulties and to display a less sound financial structure; however, businesses may also have chosen to postpone debt repayment in times of high uncertainty. On the basis of the microsimulation model, just over a third of the incorporated enterprises that benefitted from the moratorium were financially vulnerable.

Other characteristics being equal (size, sector, geographic area), the probability of accessing moratoria, averaging 34 per cent for the firms analysed, was about 4 percentage points higher for the financially vulnerable companies (Table A3, col. 4 in the Appendix C). The presence of relatively risky companies among those in moratoria is confirmed by the analysis of some balance sheet indicators. Controlling for firms' characteristics, the probability of being in moratorium is higher for companies with reduced interest expense coverage, low liquidity ratio, and high leverage (Table A3, col. 6 in the Appendix C). However, the incidence is also lower for the less profitable ones, suggesting a possible selection of those potentially capable of recovering the pandemic-induced drop in turnover.

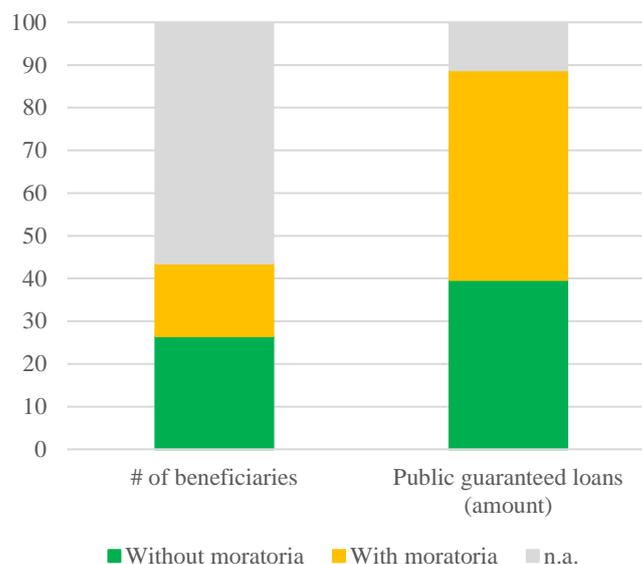
The analysis of moratoria can be complemented with that of guaranteed loans to assess the link between the two measures. Figure 5 shows that, for the subset of companies for which both information is available, around 40 per cent of companies with guaranteed loans also benefitted from a moratorium; however, the share of loans exceeds 50 per cent, indicating that small and medium-sized enterprises relied on this measure. This suggests that micro-firms, which are typically subject to more severe financial constraints, have not been the only ones to be impacted by the liquidity strains caused by the health emergency.

---

<sup>5</sup> The information is collected in the context of the work of the Task Force, which includes the Ministry of Economy and Finance, the Ministry of Economic Development, the Bank of Italy, the Italian Banking Association, Mediocredito Centrale and SACE (see <https://www.bancaditalia.it/focus/COVID-19/task-force/index.html>).

<sup>6</sup> This figure is lower than that of the weekly survey because AnaCredit does not detect loans from non-bank financial institutions, those granted to sole proprietorships and those below the threshold of EUR 25,000.

Figure 5. Access to public guaranteed loans for beneficiaries and non-beneficiaries of the moratoria  
(per cent, Mar. 2020 – Mar. 2021)



Source: CGF and SACE for guaranteed loans; AnaCredit for moratoria.

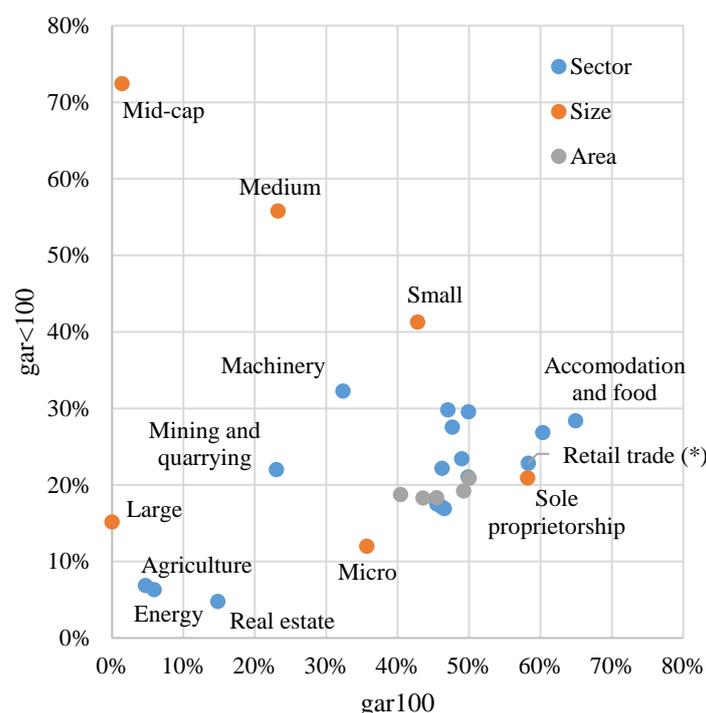
## 5. Probability of access to public guarantee schemes

The availability of a census database on individual beneficiaries of public guarantee schemes allows us to distinguish them (Table 1, col. 4) from the others (Table 1, col. 5) and to assess the likelihood of resorting to this measure on the basis of firms' characteristics, riskiness and the use of moratoria. In what follows, loans are divided into two categories, namely fully or partially guaranteed loans, depending on the different access to the two measures, especially across size classes. Figure 6 shows on the x-axis (y-axis) the share of enterprises that have resorted to loans entirely (partially) guaranteed by size class, industry and geographic area.

For most of the analysed features, the share of companies with fully guaranteed loans varies between 40 and 50 per cent; this share ranges between 20 and 30 per cent for loans with a lower coverage. The main differences concern size classes and sectors of economic activity, while those between geographical areas are marginal. As expected, the share of fully guaranteed loans is higher among sole proprietorships, micro and small firms, due to the limited volumes that can be financed in this form; small enterprises have however resorted to both types of financing, while a large share of medium-sized companies and mid-caps has benefitted from partially guaranteed loans.

Among the economic sectors, agriculture, energy and real estate industries have taken advantage of guaranteed loans only to a very limited extent; conversely, the retail trade and the accommodation and food service activities, most affected by the containment measures, have made extensive use of both types of guarantees.

Figure 6. Share of firms by guarantee coverage  
(per cent, Mar. 2020 – Mar. 2021)



Source: CGF, SACE, CCR, Cerved. Enterprises with bad loans in March 2020 are excluded. Companies are divided between those that have at least one 100 per cent guaranteed loan (gar100) and those that have only loans with a state guarantee of less than 100 per cent (gar<100). The respective shares cannot be added because the denominator is different: for the former, large companies and those with guaranteed loans of less than 100 per cent are not included; for the latter, those with at least one 100 per cent guaranteed loan are excluded. (\*) Retail trade, except for motor vehicles and motorcycles.

A higher incidence of risky enterprises among beneficiaries of guaranteed loans can have effects on financial stability due to the negative consequences on the banking system and the public budget. The links between the probability of obtaining a guarantee-backed financing (including private guarantees) and the riskiness of a company are not unique. On the one hand, the presence of guarantees can facilitate the access to credit for companies that are sound but small, opaque or young; on the other hand, moral hazard can materialise if the guarantee schemes encourage intermediaries to reduce the selection and monitoring processes of the beneficiaries of the public funds.<sup>7</sup> In addition, government guarantees, unlike the private ones, do not necessarily mitigate the problems of information asymmetry on the use of funds and the opportunistic behaviour of companies;<sup>8</sup> these effects could be stronger in the case of fully secured loans, for which banks bear no credit risk.

To assess the relationship between the probability of obtaining guaranteed loans (fully or in part) and the firm riskiness or their use of a moratorium, we run a linear regression to include also the other firm characteristics, that partially control for credit demand and supply factors linked to the industry riskiness, firm size and geographic area. The estimated coefficients – shown in Table A4 in the

<sup>7</sup> See Manove *et al.* (2001).

<sup>8</sup> Once the loan has been obtained, the borrower could, for example, adopt risky behaviour likely to jeopardise the repayment of the loan (see Myers and Majluf, 1984).

Appendix C – indicate the differentials in the probability of access to guaranteed loans between risky or in moratorium enterprises and the other firms.<sup>9</sup>

For companies with NPLs before the pandemic, the average probability of obtaining a guaranteed loan is much lower than for those *in bonis*, especially for fully guaranteed loans (-23 percentage points compared to a base probability of 36 per cent). The results hold for vulnerable companies, even if the differences are less evident: for these firms the probability is reduced especially for partially guaranteed loans (-6 percentage points compared to a base probability of 25 per cent). This outcome can be explained by the difference between the two risk indicators: the first identifies companies with credit strains before the pandemic, while the second signals the prospective difficulties in the repayment of loans and therefore includes a wider and relatively less risky set of enterprises.

An assessment of the characteristics of the limited liability companies that have resorted to guaranteed loans confirms that these firms are financially fragile, but not particularly risky. The probability of access is higher for illiquid companies, those with a higher ratio of interest expense to gross operating margin and a higher leverage, but it is lower for unprofitable companies (Table A5 in the Appendix C).

Companies that have applied for moratoria have a higher probability of accessing guaranteed loans; in particular, for those without full coverage, the incidence is about 14 percentage points higher than for companies without a moratorium (28 per cent). These results confirm that firms may have resorted to both measures to support their financial needs.

## 6. Conclusions

Firms' liquidity needs, which increased significantly during the pandemic as a result of declining cash flows, were met by the availability of credit and government support measures, which were much more relevant than in the years of the global financial crisis (Bartiloro et al., 2012).<sup>10</sup> Lending policies remained relaxed, partly due to the massive Eurosystem's liquidity injections. Bank debt increased at a sustained pace since March 2020, first for medium and large firms and, since June, after many years of contraction, even for small companies.

These developments have warded off severe liquidity squeezes, an abrupt credit crunch and a large wave of defaults, while paving the way for a subsequent recovery (Ferrero et al., 2021). Government support has progressively shifted from liquidity assistance to structural measures aimed at reviving economic growth (Group of Thirty, 2020; Visco, 2021), addressed not specifically to SMEs but to the business community at large (OECD, 2021).

Even though the recent economic rebound has lessened the concerns about possible economic scarring (Portes, 2020), uncertainties related to a worsening of the pandemic calls for a smooth exit from financial support initiatives (Bank of Italy, 2021), planned to expire in the coming months, to avoid the risk of jeopardising the still fragile recovery.

---

<sup>9</sup> In mostly all the regressions the estimated coefficients of the variables of interest do not change if other firm characteristics (liquidity, interest coverage ratio, leverage and profitability) are included.

<sup>10</sup> According to estimates based on over 700,000 joint-stock companies, at the end of 2020 – thanks to government measures approved between March and August – the number of firms in liquidity shortages would have been reduced from 142,000 to about 32,000, while the total needs would have fallen from EUR 48 to 17 billion. For further details, see De Socio et al. (2020).

Actions aimed at sustaining firms' balance sheet strength, combined with recapitalisation programmes and a well-timed phasing-out strategy, can increase the resilience of the corporate sector to shocks, hence lessening financial stability risks.

## Appendix

### Appendix A

#### *The evolution of the regulatory framework*

The Government has launched a broad and comprehensive action plan to mitigate the effects of the pandemic on the productive system. The measures to support access to credit have focused on public loan guarantee programmes, at first with the Decree Law 18/2020, converted into Law 27/2020 (“Cure Italy” Decree) and then with the Decree Law 23/2020, converted into Law 40/2020 (“Liquidity Decree”), aimed at the majority of Italian companies; liquidity relief has been ensured by *ex lege* and private moratoria.

**Central Guarantee Fund (CGF) for SMEs.** The strengthening of the Fund has allowed: i) the eligibility of mid-caps (250-499 employees) and of firms with less balanced financial conditions, while in any case excluding firms with exposures classified as bad loans;<sup>11</sup> ii) the increase in the maximum amount guaranteed per firm from EUR 2.5 million to EUR 5 million; iii) the provision of the guarantee at no charge; iv) the rise of the coverage to 90 per cent for all loans with pre-set characteristics in terms of maturity and maximum amount; v) the automatic granting, i.e. without prior authorization on the part of the Fund, of loans of less than EUR 25,000 (later increased to EUR 30,000), fully covered by the state-backed guarantee; vi) the elimination of the creditworthiness assessment by the Fund;<sup>12</sup> vii) the access to the instrument for individuals whose businesses have been damaged by the health emergency; viii) the extension of the intervention – under certain conditions – to debt rescheduling.

In short, the current set-up of the coverages ensured by the Fund provides for three bands: 100 per cent for loans up to EUR 30,000 (Article 13, paragraph 1, letter (m) of Decree Law 23/2020); 80 per cent for debt rescheduling referred to in Article 13, paragraph 1, letter (e) and for real estate investment in the tourism and accommodation sectors; 90 per cent for all other financial operations. In addition to mitigating credit risk, the state-backed demand guarantee enables banks to nullify the capital absorption on the portion of the loans covered by the Fund.

Subsequent legislative provisions have progressively increased the Fund’s endowment and the duration of the measure, of a temporary nature, has been extended several times; lastly, at the time of writing, Decree Law 73/2021 (‘Support-*bis*’) has prolonged the deadline of the extraordinary operations of the Fund, formerly set for 31 December 2020, to 31 December 2021. As envisaged by the 2021 Budget Law (Law 178/2020), access to the Fund for mid-caps has expired on 28 February; these firms can now tap the ‘Guarantee Italy’ programme delivered by SACE until the end of 2021.

---

<sup>11</sup> In particular, guarantees can also be granted to firms with non-performing loans not prior to 31 January 2020. Among others, firms that are renegotiating a business continuity arrangement procedure and those that have signed restructuring agreements can also access the Fund.

<sup>12</sup> Banks usually submit to the Committee loans for which they have already carried out a prior eligibility assessment or have already approved (with effect of the resolution necessarily subject to the issue of the guarantee). Banks therefore tend not to send guarantee requests for operations they are not willing to finance. Given how the Fund works, the operations for which the guarantee is granted are finalised by the banks in most cases.

This choice aims at bringing the Central Guarantee Fund back to its original support mission for SMEs.

**SACE.** The state guarantee system has been strengthened by giving SACE, whose tasks have been redefined, the role of providing public guarantees with coverage percentages that decrease from 90 to 70 per cent as firm size increases. The initiative, aimed at large firms, has also been extended to SMEs that have exhausted their ability to access the Central Guarantee Fund.

The 2021 Budget Law has provided for the extension of the ‘Guarantee Italy’ instrument provided by SACE from 31 December 2020 to 30 June 2021 in order to sustain the companies affected by the pandemic containment measures. Lastly, at the time of writing, Decree Law 73/2021 (‘Support-*bis*’) has extended the initiative until 31 December 2021.

**Moratoria.** Article 56 of Decree Law 18/2020 has introduced a debt moratorium for SMEs that have no debts classified as non-performing at the date of entry into force of the decree but that are facing a temporary liquidity shortage owing to the COVID-19 crisis, attested by self-declaration. Specifically, it was initially envisaged to: (a) freeze the amounts authorized for revocable credit lines and for loans granted against advances on receivables until 30 September 2020; (b) defer until 30 September the repayment of loans maturing prior to that date; (c) suspend mortgage instalments and lease payments during the same period. This initiative has been extended several times, most recently by Decree Law 73/2021 but only for the capital share.

The *ex lege* measure has been accompanied by the private moratorium promoted by the Italian Banking Association (ABI), which allows participating banks and financial intermediaries to suspend loan instalments up to one year and lengthen their maturity by extending the measure ‘Imprese in Ripresa 2.0’ to the operations outstanding at 31 January 2020 for companies affected by the pandemic. The initiative has been revised several times to extend its duration, the number of beneficiaries and the scope of operations, by including firms that have no debt classified as non-performing (while excluding those with exposures classified as bad loans) as of 31 January 2020 and prolonging the suspension period up to 24 months for companies operating in sectors or production chains most affected by the pandemic emergency.

## Appendix B

### *Methodological note on size classes*

Size classes available in MCC, SACE and Cerved is based on EC recommendation 361 (May 6th 2003): a) a micro-firm is defined as an enterprise which employs fewer than 10 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 2 million; b) a small firms is defined as an enterprise which employs between 10 and 49 persons and whose annual turnover and/or annual balance sheet total is between EUR 2 and 10 million; c) a medium-sized firm is defined as an enterprise which employs between 50 and 249 persons and whose annual turnover and/or annual balance sheet total is between EUR 10 million and 50 or 43 million, respectively. Large firms are the remaining ones. Among this last class, mid-caps are those which employ between 250 and 499 persons.

In order to obtain a homogenous classification starting from different sources (MCC, SACE, Cerved, CCR, INPS), the following procedure has been adopted:

- 1) firms with alphanumeric fiscal codes are considered sole proprietorships;
- 2) firms with numeric fiscal code are classified according to the size class already available in the various datasets in the following order (i.e. the second is used if the information is not available in the first source and so on): MCC (micro, small, medium-sized, mid-cap), SACE (large), Cerved (micro, small, medium-size, large);<sup>13</sup>
- 3) large firms have been divided between mid-caps and the others based on INPS data on employees;
- 4) firms that are recorded in the CCR only (incorporated companies, unincorporated firms, producer households) are classified based on INPS data on employees, if available;<sup>14</sup>
- 5) all remaining firms (those recorded in the CCR without INPS information) are considered without employees and are classified among micro-firms.

### Definition of geographical area

This classification is based on the information of the province available in the databases used in the analysis, in the following order (i.e. the second is used if the information is not available in the first source and so on): CCR, Cerved, MCC, SACE.

### Definition of sectors of economic activity

This classification is based on the information available in the databases used in the analysis, in the following sequence (i.e. the second is used if the sector is not available in the first source and so on): MCC, SACE, Cerved, CCR.

---

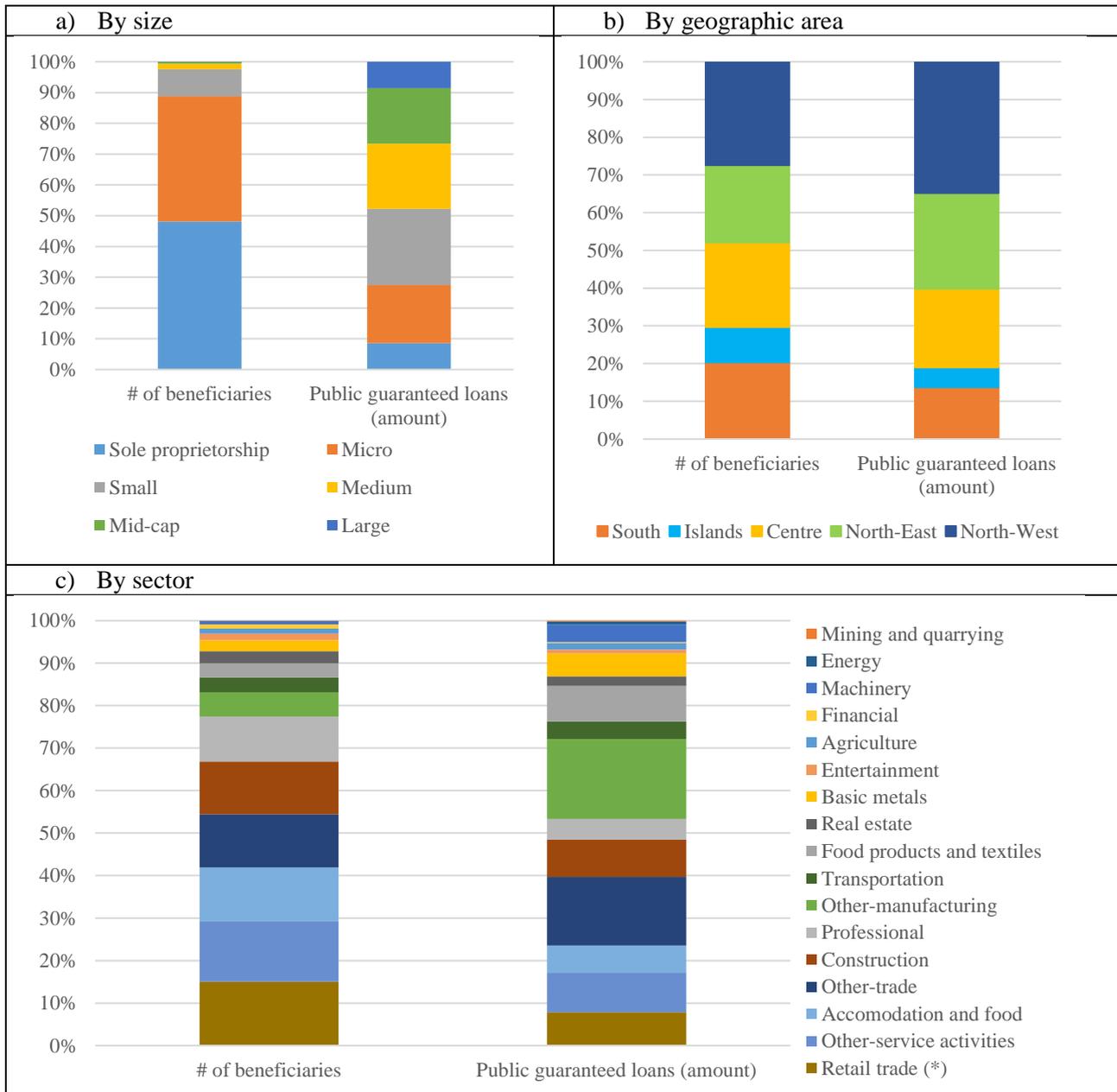
<sup>13</sup> Cerved data have been integrated with INPS information if the number of employees was not available.

<sup>14</sup> Based only on employee data, firms are classified as follows: micro (less than 10), small (between 10 and 49), medium-sized (between 50 and 249), mid-cap (between 250 and 499), large (more than 500).

# Appendix C

## Figures and tables

Figure A1. Access to public guaranteed loans  
(percentage shares, Mar. 2020 – Mar. 2021)



Source: CGF and SACE. (\*) Retail trade, except for motor vehicles and motorcycles.

Table A1. Public guaranteed loans and change in credit granted

For companies with public guaranteed loans, the flow of those with guarantee (col. 4) is calculated between March 2020 and February 2021 while the change in credit in the CCR (col. 2) refers to the period March 2020 -March 2021, because an average delay of one month is assumed between the approval and the actual disbursement of the guaranteed loans. The approval of the CGF or SACE does not imply the immediate granting of the credit by the intermediary, which has the right to delay or refuse the granting of the loan.

a) Total loans to non-financial firms							
	Change in granted loans (Mar. 2020 – Mar. 2021, EUR billion)			Flow of public guaranteed loans (Mar. 2020 – Feb. 2021, EUR billion)	Percentage change in granted loans (Mar. 2020 – Mar. 2021)		
	total firms	firms with public guaranteed loans	firms without public guaranteed loans		total firms	firms with public guaranteed loans	firms without public guaranteed loans
<b>Total</b>	75.4	94.0	-18.6	144.5	7%	22%	-3%
<b>By firm size</b>	0.0	0.0	0.0	0.0			
Sole proprietorship	5.5	5.6	-0.1	6.4	11%	31%	0%
Micro	18.3	19.4	-1.1	25.9	9%	31%	-1%
Small	18.8	22.1	-3.3	37.5	11%	23%	-4%
Medium	10.4	19.2	-8.9	32.9	6%	18%	-11%
Mid-cap	12.1	16.8	-4.8	28.0	6%	13%	-7%
Large	10.2	10.7	-0.5	13.8	5%	43%	0%
<b>By sector</b>							
Agriculture	2.3	1.5	0.7	2.2	6%	16%	3%
Mining and quarrying	1.3	0.2	1.1	0.3	14%	22%	14%
Food products and textiles	6.5	7.4	-0.9	12.8	8%	16%	-3%
Basic metals	5.1	4.9	0.3	8.2	11%	16%	2%
Machinery	3.5	4.2	-0.8	6.4	9%	20%	-4%
Other- manufacturing	18.5	18.5	0.0	29.6	12%	20%	0%
Energy	0.0	0.5	-0.5	1.1	0%	13%	-2%
Construction	6.0	8.5	-2.4	12.3	8%	27%	-5%
Real estate	-0.8	1.9	-2.7	3.2	-1%	11%	-4%
Retail trade (*)	7.5	7.3	0.2	10.5	17%	34%	1%
Other-trade	9.6	13.2	-3.6	24.1	7%	17%	-7%
Transportation	1.1	4.5	-3.3	6.0	2%	27%	-7%
Accommodation and food	7.0	7.0	-0.1	8.5	22%	35%	-1%
Entertainment	0.8	0.8	0.0	1.1	17%	36%	-1%
Professional	3.6	4.4	-0.7	5.4	5%	36%	-1%
Financial	0.1	0.1	0.0	0.1	15%	38%	4%
Other-service activities	3.2	9.1	-5.9	12.9	3%	31%	-9%
<b>By geographic area</b>							
Centre	10.6	18.7	-8.0	29.8	4%	23%	-5%
Islands	3.6	4.3	-0.7	7.0	12%	25%	-5%
North-East	20.3	23.4	-3.1	37.2	7%	17%	-2%
North-West	30.7	35.5	-4.8	51.6	8%	23%	-2%
South	10.1	12.2	-2.1	18.8	13%	28%	-6%
<b>NPLs at Mar. 2020</b>							
Without NPLs	55.0	74.8	-19.8	124.8	6%	18%	-4%

With NPLs	-4.4	7.6	-12.0	11.3	-3%	35%	-11%
N.A.	24.7	11.6	13.1	8.4	n.a.	n.a.	n.a.
<b>Vulnerability at end-2020</b>							
Non vulnerable	42.4	51.5	-9.1	81.8	8%	19%	-3%
Vulnerable	15.1	19.2	-4.0	33.2	8%	22%	-4%
N.A.	17.8	23.3	-5.5	29.5	6%	30%	-3%
<b>Moratoria</b>							
No	28.0	41.4	-13.3	59.8	5%	28%	-3%
Yes	42.6	45.7	-3.1	76.6	11%	17%	-3%
N.A.	4.8	7.0	-2.2	8.1	6%	34%	-3%
<b>b) Long-term loans</b>							
	Change in granted loans (Mar. 2020 - Mar. 2021, EUR billion)			Percentage change in granted loans (Mar. 2020 - Mar. 2021)			
	total firms	firms with public guaranteed loans	firms without public guaranteed loans	total firms	firms with public guaranteed loans	firms without public guaranteed loans	
Total	106.5	105.7	0.9	19%	52%	0%	
<b>By firm size</b>							
Sole proprietorship	5.8	5.5	0.3	15%	45%	1%	
Micro	18.9	20.0	-1.1	14%	58%	-1%	
Small	23.6	24.8	-1.2	26%	57%	-2%	
Medium	17.2	22.5	-5.4	19%	51%	-12%	
Mid-cap	19.8	20.3	-0.5	23%	37%	-2%	
Large	21.2	12.5	8.8	20%	103%	9%	
<b>By sector</b>							
Agriculture	2.8	1.8	1.0	10%	28%	5%	
Mining and quarrying	1.8	0.2	1.5	32%	51%	30%	
Food products and textiles	9.0	9.0	-0.0	28%	47%	0%	
Basic metals	6.5	5.5	1.0	34%	45%	14%	
Machinery	4.5	4.8	-0.3	26%	54%	-4%	
Other-manufacturing	23.6	22.1	1.5	37%	60%	6%	
Energy	0.5	0.7	-0.2	2%	42%	-1%	
Construction	7.4	8.7	-1.3	16%	57%	-4%	
Real estate	-0.5	2.1	-2.6	-1%	14%	-4%	
Retail trade (*)	8.5	7.7	0.8	34%	66%	6%	
Other-trade	16.3	16.0	0.3	41%	64%	2%	
Transportation	3.2	4.5	-1.3	8%	46%	-4%	
Accommodation and food	7.5	7.4	0.2	30%	46%	2%	
Entertainment	0.8	1.0	-0.2	27%	72%	-10%	
Professional	4.2	4.3	-0.1	8%	61%	0%	
Financial	0.1	0.1	0.0	17%	46%	5%	
Other-service activities	10.3	9.8	0.4	18%	63%	1%	
<b>By geographic area</b>							
Centre	21.7	20.7	1.0	16%	55%	1%	
Islands	4.3	4.7	-0.4	24%	53%	-4%	
North-East	26.9	27.3	-0.5	19%	43%	-1%	
North-West	40.8	39.3	1.5	20%	56%	1%	
South	12.8	13.6	-0.8	30%	63%	-4%	
<b>NPLs at Mar. 2020</b>							

Without NPLs	81.5	86.9	-5.4	17%	45%	-2%
With NPLs	6.1	9.3	-3.1	8%	87%	-5%
N.A.	18.9	9.5	9.4	n.a.	n.a	n.a.
<b>Vulnerability at end-2020</b>						
Non vulnerable	58.2	59.0	-0.7	22%	49%	0%
Vulnerable	23.3	23.3	0.0	25%	65%	0%
N.A.	25.0	23.4	1.6	13%	52%	1%
<b>Moratoria</b>						
No	46.4	44.4	2.0	16%	72%	1%
Yes	53.7	54.6	-0.9	27%	43%	-1%
N.A.	6.5	6.7	-0.2	11%	49%	0%
<b>c) Short-term loans</b>						
	Change in granted loans (Mar. 2020 - Mar. 2021, EUR billion)			Growth in granted loans (Mar. 2020 - Mar. 2021)		
	total firms	firms with public guaranteed loans	firms without public guaranteed loans	total firms	firms with public guaranteed loans	firms without public guaranteed loans
Total	-31.2	-11.7	-19.5	-7%	-5%	-9%
<b>By firm size</b>						
Sole proprietorship	-0.2	0.1	-0.4	-2%	2%	-5%
Micro	-0.6	-0.6	0.0	-1%	-2%	0%
Small	-4.8	-2.7	-2.1	-6%	-5%	-7%
Medium	-6.8	-3.3	-3.5	-7%	-5%	-10%
Mid-cap	-7.8	-3.5	-4.3	-7%	-5%	-11%
Large	-11.0	-1.7	-9.3	-12%	-14%	-11%
<b>By sector</b>						
Agriculture	-0.5	-0.2	-0.2	-5%	-7%	-4%
Mining and quarrying	-0.5	-0.0	-0.4	-14%	-5%	-15%
Food products and textiles	-2.5	-1.6	-0.9	-6%	-6%	-5%
Basic metals	-1.3	-0.6	-0.7	-5%	-4%	-8%
Machinery	-1.0	-0.6	-0.5	-5%	-5%	-5%
Other-manufacturing	-5.1	-3.6	-1.5	-6%	-7%	-4%
Energy	-0.5	-0.2	-0.3	-5%	-8%	-4%
Construction	-1.4	-0.2	-1.1	-5%	-1%	-9%
Real estate	-0.3	-0.2	-0.1	-3%	-8%	-1%
Retail trade (*)	-1.1	-0.4	-0.6	-6%	-4%	-7%
Other-trade	-6.7	-2.8	-3.9	-7%	-5%	-10%
Transportation	-2.1	-0.1	-2.0	-8%	-1%	-11%
Accommodation and food	-0.6	-0.3	-0.2	-9%	-8%	-10%
Entertainment	-0.0	-0.2	0.2	-1%	-19%	18%
Professional	-0.6	0.1	-0.7	-2%	2%	-4%
Financial	0.0	0.0	0.0	7%	13%	4%
Other-service activities	-7.0	-0.7	-6.3	-17%	-5%	-23%
<b>By geographic area</b>						
Centre	-11.1	-2.1	-9.0	-11%	-5%	-15%
Islands	-0.7	-0.4	-0.3	-6%	-5%	-8%
North-East	-6.5	-4.0	-2.6	-5%	-6%	-5%
North-West	-10.2	-3.8	-6.3	-6%	-4%	-7%

South	-2.7	-1.4	-1.3	-8%	-6%	-11%
<b>NPLs at Mar. 2020</b>						
Without NPLs	-26.5	-12.1	-14.4	-7%	-5%	-8%
With NPLs	-10.5	-1.7	-8.8	-19%	-16%	-20%
N.A.	5.9	2.2	3.7	n.a.	n.a.	n.a.
<b>Vulnerability at end-2020</b>						
Non vulnerable	-15.8	-7.5	-8.3	-6%	-5%	-7%
Vulnerable	-8.2	-4.2	-4.0	-9%	-8%	-10%
N.A.	-7.2	-0.1	-7.1	-7%	0%	-11%
<b>Moratoria</b>						
No	-18.4	-3.0	-15.4	-7%	-3%	-9%
Yes	-11.1	-8.9	-2.2	-6%	-6%	-6%
N.A.	-1.7	0.2	-2.0	-6%	4%	-10%

Source: CFG, SACE, CCR. (\*) Retail trade, except for motor vehicles and motorcycles.

Table A2. Public guaranteed loans by coverage degree

	# of firms with guaranteed loans			Amount of guaranteed loans Mar. 2020 - Mar. 2021 (EUR billion)		
	with at least one fully guaranteed loan	without any fully guaranteed loan	total	fully guaranteed loans	not fully guaranteed loans	total
Total	963,042	272,207	1,235,249	21.8	143.2	165.0
<b>By firm size</b>						
Sole proprietorship	499,422	94,988	594,410	9.7	4.5	14.2
Micro	403,225	99,064	502,289	10.5	20.6	31.1
Small	56,049	52,780	108,829	1.5	39.3	40.8
Medium	4,307	17,954	22,261	0.1	34.8	34.9
Mid-cap	39	7,178	7,217	0.0	29.8	29.8
Large	0	243	243	0.0	14.1	14.1
<b>By sector</b>						
Agriculture	5,637	8,530	16,391	0.2	2.5	2.6
Mining and quarrying	405	383	754	0.0	0.3	0.3
Food products and textiles	29,544	12,482	40,429	0.7	13.1	13.8
Basic metals	21,946	10,508	31,585	0.6	8.3	8.8
Machinery	4,558	4,592	8,967	0.1	6.6	6.8
Other-manufacturing	49,261	20,714	67,993	1.2	29.9	31.1
Energy	682	744	1,409	0.0	1.2	1.3
Construction	122,235	31,101	145,695	2.8	11.7	14.5
Real estate	26,916	7,797	37,303	0.6	3.3	3.8
Retail trade (*)	153,538	32,576	177,200	3.6	9.3	12.9
Other-trade	117,171	37,452	148,485	2.7	24.0	26.7
Transportation	32,113	10,707	41,687	0.8	6.0	6.8
Accommodation and food	129,350	27,735	151,545	3.1	7.4	10.5
Entertainment	15,520	3,744	18,425	0.4	1.1	1.5
Professional	103,316	27,708	116,911	2.0	5.9	7.9
Financial	9,431	2,276	9,409	0.2	0.0	0.3
Other-service activities	141,419	33,158	166,313	2.9	12.5	15.4
<b>By geographic area</b>						
Centre	216,326	58,336	262,998	4.9	29.5	34.4
Islands	90,742	23,948	105,981	2.1	6.6	8.6
North-East	187,131	63,961	243,515	4.4	37.4	41.7
North-West	260,111	75,634	330,846	6.0	51.5	57.4
South	199,464	48,993	237,161	4.4	18.2	22.6
<b>NPLs at Mar. 2020</b>						
Without NPLs	330,920	149,987	475,677	8.8	123.2	131.9
With NPLs	7,974	3,164	12,704	0.2	11.3	11.5
N.A.	624,148	119,056	692,120	12.8	8.7	21.5
<b>Vulnerability at end-2020</b>						
Non vulnerable	113,137	76,233	193,483	3.2	83.9	87.0
Vulnerable	76,550	30,794	93,112	2.0	33.2	35.2
N.A.	773,355	165,180	893,906	16.6	26.1	42.7
<b>Moratoria</b>						
No	240,601	86,814	301,550	6.9	58.5	65.4
Yes	138,346	71,711	196,437	3.8	77.3	81.1
N.A.	584,095	113,682	682,514	11.2	7.3	18.5

Source: CFG, SACE. (\*) Retail trade, except for motor vehicles and motorcycles.

Table A3. Access to moratoria

The table shows the estimated coefficients with linear probability models. The regressors are dummies relative to the last three quartiles of the respective indicators. A dummy equals to 1 is included for each regressor if information is missing in order to include all observations in the estimations. Control dummies refer to size (5 dummies), industry (16 dummies) and geographical area (4 dummies). Standard errors are calculated with clusters at industry level; \*p-value<0.1, \*\*p-value<0.05, \*\*\*p-value<0.01.

		Dependent variable: dummy if a firm has benefitted from a moratorium since March 2020					
Regressors:							
NPLs at Mar. 2020		-0.209***	-0.203***				
Vulnerability at end-2020				0.029***	0.037***		
Liquidity/ Assets	2 <sup>nd</sup> quartile					-0.020***	-0.024***
	3 <sup>rd</sup> quartile					-0.057***	-0.062***
	4 <sup>th</sup> quartile					-0.106***	-0.114***
EBITDA/ Assets	2 <sup>nd</sup> quartile					0.079***	0.084***
	3 <sup>rd</sup> quartile					0.112***	0.113***
	4 <sup>th</sup> quartile					0.082***	0.087***
Interest expense/ EBITDA	2 <sup>nd</sup> quartile					0.118***	0.092***
	3 <sup>rd</sup> quartile					0.221***	0.208***
	4 <sup>th</sup> quartile					0.321***	0.312***
Leverage	2 <sup>nd</sup> quartile					0.124***	0.122***
	3 <sup>rd</sup> quartile					0.267***	0.259***
	4 <sup>th</sup> quartile					0.259***	0.252***
Control dummies		NO	YES	NO	YES	NO	YES
Adjusted R-squared		0.084	0.105	0.003	0.028	0.134	0.155
# of firms		849,796	849,009	849,796	849,009	447,415	447,298

Table A4. Public guaranteed loans, firm riskiness and use of moratoria

The table shows the estimated coefficients with linear probability models. The dependent variables are dummies equal to 1 if the company has 100 per cent public guaranteed loans (gar100) or if the company has loans with state guarantee of less than 100 per cent (gar<100); dummy is equal to zero if the companies do not hold public guaranteed loans. For gar100 large enterprises are also excluded from the regression. The regressors are dummy equal to 1 (YES) if, alternately, the enterprise has NPLs, is vulnerable or had access to the moratorium. For the definition of vulnerability, see footnote 1. A dummy equals to 1 is included for each regressor if information is missing in order to include all observations in the estimations. Control dummies refer to size (5 dummies), industry (16 dummies) and geographical area (4 dummies). Standard errors are calculated with clusters at industry level; \*p-value<0.1, \*\*p-value<0.05, \*\*\*p-value<0.01.

	Y = gar100		Y = gar<100	
	<i>NPLs at Mar. 2020</i>			
YES	-0.235*** (0.033)	-0.229*** (0.036)	-0.149*** (0.025)	-0.123*** (0.020)
NO (average)	0.360		0.203	
Adjusted R-squared	0.045	0.171	0.006	0.133
	<i>vulnerability at end-2020</i>			
YES	0.023 (0.030)	-0.014 (0.017)	-0.069** (0.029)	-0.056*** (0.009)
NO (average)	0.330		0.248	
Adjusted R-squared	0.018	0.141	0.007	0.106
	<i>moratoria</i>			
YES	0.098*** (0.017)	0.090*** (0.019)	0.175*** (0.033)	0.144*** (0.030)
NO (average)	0.517		0.278	
Adjusted R-squared	0.022	0.239	0.085	0.181
Control dummies	NO	YES	NO	YES
# of firms	2,140,460	2,123,193	1,450,902	1,441,564

Table A5. Public guaranteed loans and firms' balance sheet characteristics

The table shows the estimated coefficients with linear probability models. The dependent variables are dummy equal to 1 if the company has 100 per cent public guaranteed loans (gar100) or if the company has loans with state guarantee of less than 100 per cent (gar<100); dummy is equal to zero if the companies do not hold public guaranteed loans. For gar100 large enterprises are also excluded from the regression. The regressors are dummies relative to the last three quartiles of the respective indicators. A dummy equals to 1 is included for each regressor if information is missing in order to include all observations in the estimations. Control dummies refer to size (5 dummies), industry (16 dummies) and geographical area (4 dummies). Standard errors are calculated with clusters at industry level; \*p-value<0.1, \*\*p-value<0.05, \*\*\*p-value<0.01.

		<b>Y = gar100</b>		<b>Y = gar&lt;100</b>	
Liquidity/ Assets	2 <sup>nd</sup> quartile	0.027**	0.060***	0.018***	0.041***
	3 <sup>rd</sup> quartile	-0.012	0.037	-0.004	0.027
	4 <sup>th</sup> quartile	-0.113***	-0.059*	-0.055***	-0.028
EBITDA/ Assets	2 <sup>nd</sup> quartile	0.072***	0.035	0.084***	0.078**
	3 <sup>rd</sup> quartile	0.152***	0.139***	0.132***	0.143***
	4 <sup>th</sup> quartile	0.173***	0.184***	0.122***	0.120***
Interest expense/ EBITDA	2 <sup>nd</sup> quartile	-0.029***	-0.053***	0.017*	0.105***
	3 <sup>rd</sup> quartile	0.137***	0.150***	0.120***	0.181***
	4 <sup>th</sup> quartile	0.202***	0.226***	0.148***	0.207***
Leverage	2 <sup>nd</sup> quartile	0.056***	0.056***	0.088***	0.106***
	3 <sup>rd</sup> quartile	0.118***	0.127***	0.200***	0.242***
	4 <sup>th</sup> quartile	0.083***	0.091***	0.126***	0.124***
Control dummies		NO	YES	NO	YES
# of firms		632,650	638,032	534,181	539,566

## References

- Anderson, J., F. Papadia, and N. Véron (2021), “COVID-19 credit-support programmes in Europe’s five largest economies”, Working Paper 03/2021, Bruegel.
- Banerjee, R., A. Illes, E. Kharroubi, and J.-M. Serena (2020), “COVID-19 and corporate sector liquidity”, BIS Bulletin No. 10, Bank for International Settlements.
- Bank of Italy (2021), “Financial Stability Report”, No. 2.
- Bartiloro, L., Carpinelli, L., Finaldi Russo, P., and S. Pastorelli (2012), “L’accesso al credito in tempo di crisi: le misure di sostegno a imprese e famiglie”, Banca d’Italia, Questioni di Economia e Finanza (Occasional Papers), No. 111.
- Demmou, L., G. Franco, S. Calligaris, and D. Dlugosch (2020), “Corporate sector vulnerabilities during the COVID-19 outbreak: Assessment and policy responses”, OECD, Tackling Coronavirus Series.
- De Socio, A., and V. Michelangeli (2017), “A model to assess the financial vulnerability of Italian firms”, *Journal of Policy Modeling*, 39, pp. 147-168.
- De Socio, A., S. Narizzano, T. Orlando, F. Parlapiano, G. Rodano, E. Sette, and G. Viggiano (2020), “Gli effetti della pandemia sul fabbisogno di liquidità, sul bilancio e sulla rischiosità delle imprese”, Banca d’Italia, “Note COVID-19”, 13 November.
- ECB (2020), “Public loan guarantees and bank lending in the COVID-19 period”, *Economic Bulletin*, Issue 6.
- Ferrero, G., M. Pisani, and M. Tasso (2021), “Policy mix during a pandemic crisis: a review of the debate on monetary and fiscal responses and the legacy for the future”, Banca d’Italia, Questioni di Economia e Finanza (Occasional Papers), No. 623.
- Group of Thirty (2020), “Reviving and Restructuring the Corporate Sector Post-COVID. Designing public policy interventions”, Washington, December.
- Manove, M., A. J. Padilla, and M. Pagano (2001), “Collateral versus Project Screening: a Model of Lazy Banks”, *The RAND Journal of Economics*, 32(4), pp. 726-44.
- Myers S.C., and N.J. Majluf (1984), “Corporate Financing and Investment Decision When Firms Have Information That Investors Do Not Have”, *Journal of Financial Economics*, 13 (2), pp. 187-221.
- OECD (2020), “Corporate sector vulnerabilities during the COVID-19 outbreak: Assessment and policy responses”, *Tackling Coronavirus Series*, available at: <https://www.oecd.org/coronavirus/policy-responses/corporate-sector-vulnerabilities-during-the-COVID-19-outbreak-a6e670ea/>.
- OECD (2021), “One year of SME and entrepreneurship policy responses to COVID-19: Lessons learned to ‘build back better’”, *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, <https://doi.org/10.1787/9a230220-en>.
- Portes, J. (2020), “The lasting scars of the COVID-19 crisis: Channels and impacts”, VoxEU.org, 1 June, available at: <https://voxeu.org/article/lasting-scars-COVID-19-crisis>.

Visco, I. (2020), “The G20 under Italy’s leadership in 2021”. Keynote speech by Mr Ignazio Visco, Governor of the Bank of Italy, at The Global Foundation - Rome Roundtable 2020 “Which way the world after the pandemic? Our inclusive human future”, Virtual meeting, 16-17 November.

Visco, I. (2021), “Giornata Mondiale del Risparmio del 2021”, Intervento del Governatore della Banca d’Italia Ignazio Visco, Roma, 21 ottobre.