

EVIDENCE ON THE IMPACT OF THE
PUBLIC GUARANTEE AND DIRECT AID
SCHEMES ON SPANISH FIRMS DURING
THE COVID-19 CRISIS

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Abstract

After the outbreak of the COVID-19 pandemic, the economic authorities in many countries took steps to support firms' liquidity and solvency. This article analyses the effects of two such measures implemented by the Spanish authorities: the public guarantee schemes and direct aid. The results show that public guarantees were essential in enabling many companies to cover their main liquidity needs. In particular, this scheme was especially useful for SMEs and for companies operating in the sectors hit more severely by the health crisis, although it did not significantly alleviate the increased funding needs of companies without prior credit relationships. For its part, direct aid appears to have contributed to a very moderate reduction in the business solvency problems generated by the COVID-19 crisis, since only a small part of the aid was allocated to those companies that needed solvency support.

Keywords: business solvency, liquidity needs, public aid, COVID-19 crisis, bank credit.

JEL classification: G21, G28, G30, G33, H81.

Resumen

Tras el estallido de la pandemia del COVID-19, las autoridades económicas en muchos países desplegaron medidas de apoyo a la liquidez y a la solvencia de las empresas. En este artículo se analizan los efectos que tuvieron dos medidas implementadas por las autoridades españolas: el programa de garantías públicas y las ayudas directas. Los resultados evidencian que las garantías públicas habrían sido fundamentales para permitir que muchas empresas en nuestro país pudieran cubrir sus mayores necesidades de liquidez. En particular, este instrumento habría resultado especialmente útil para las pymes y para las empresas que operaban en los sectores más golpeados por la crisis sanitaria, si bien no habría permitido aliviar de forma significativa las mayores necesidades de fondos que enfrentaron las compañías sin relaciones crediticias previas. Por su parte, las ayudas directas habrían contribuido a una reducción muy moderada de los problemas de solvencia empresarial generados por la crisis del COVID-19, pues solamente una pequeña parte de las ayudas fue destinada a aquellas compañías que necesitaban un apoyo a su solvencia.

Palabras clave: solvencia empresarial, necesidades de liquidez, ayudas públicas, crisis del COVID-19, crédito bancario.

Códigos JEL: G21, G28, G30, G33, H81.

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1 Introduction

After the outbreak of the COVID-19 pandemic, most firms suffered an unprecedented fall in turnover associated with both the impact of greater uncertainty on demand for goods and services and, above all, the restrictions on activity imposed by the authorities to slow its spread. This significantly reduced the income of many firms, which, coupled with their payment commitments for fixed production costs and financial obligations, caused their liquidity needs to surge. Indeed, even supposing firms had made full use of their available liquidity buffers, it is estimated that the corporate sector as a whole would have been able to cover no more than 44% of its liquidity needs in the period 2020 Q2-Q4.¹ Further, around 38% of these needs arose at firms with a high or very high probability of default (PD),² and which therefore, a priori, faced more difficult access to external financing.

These liquidity problems were exacerbated by the high level of uncertainty created by the pandemic, which raised the prospect of financial institutions tightening the supply of credit. In light of this situation, the various national, international and supranational economic authorities responded swiftly, introducing a range of credit support measures. In Spain, for instance, the authorities, among other interventions, deployed a public guarantee scheme and a series of measures to shore up household and corporate income, such as furlough schemes and the deferral of rent, social security contribution and tax payments.

The extent of the crisis and its disproportionate impact on firms in certain sectors also drove up the risk of corporate insolvency. To address these risks and the potential adverse consequences of their materialisation in terms of the destruction of the productive system and employment, the Spanish authorities also approved a series of measures to support business solvency, including the creation of recapitalisation funds and a direct aid scheme.

This paper analyses the effect of two of the measures introduced to limit the liquidity and solvency problems of Spanish firms. Specifically, the second section analyses the effects of the public guarantee scheme, while the third section examines the impact of the direct aid programme for firms.

¹ Blanco, Mayordomo, Menéndez and Mulino (2021).

² PD is considered very high when it exceeds 5% and high when it is 3%-5%.

2 Effects of the public guarantee scheme

2.1 Coverage of liquidity needs in 2020

On 17 March 2020, the Spanish Government approved a €100 billion public guarantee scheme, managed by the Official Credit Institute (ICO), for loans to firms and the self-employed to help cover their liquidity needs.³ Subsequently, in July 2020, it approved another scheme amounting to €40 million, mainly to address firms' financing needs for new investments.⁴ As a result, financial institutions were able to cover much of the potential losses on loans extended under these facilities (up to 80% in the case of financing to SMEs and the self-employed and up to 70% in lending to large firms). According to the ICO's closing report, at 30 June 2022 €107 billion in guarantees had been issued (85% of which in 2020), putting the total volume of financing extended under these schemes at €141 billion.

On the information available, in 2020 a significant number of companies resorted to external financing, mainly in the form of bank credit, to meet their liquidity needs, as evidenced by the sharp increase in the stock of bank loans extended to productive activities (see Chart 1.1). As the sectoral breakdown shows, this increase was larger in the sectors most affected by the economic consequences of the pandemic.⁵

The proportion of firms' liquidity needs covered through bank loans between March 2020 (the start of the pandemic) and December 2020 is approximated by, first, estimating each firm's liquidity needs using information from the Central Balance Sheet Data Office integrated database (CBI) for 2019. The CBI includes balance sheet and income statement information for a sample of more than 850,000 firms with the accounting quality required for the analysis.

Firms' liquidity needs are estimated based on simulations of the ordinary course of business for each firm during 2020 and debt repayments in the period March-December 2020.⁶ Liquidity needs are the shortfall between receipts and outlays, with the latter including operating costs (inputs, wage costs, debt interest), the repayment of outstanding financial and non-financial debt and fixed asset investment.⁷

³ Royal Decree-Law 15/2020 of 17 March 2020.

⁴ Royal Decree-Law 25/2020 of 3 July 2020.

⁵ Turnover fell particularly sharply (more than 15% in 2020) in hospitality, manufacture of refined petroleum products, social and cultural services, transportation and storage, manufacture of textiles and the manufacture of transport equipment, hereafter collectively referred to as the sectors severely affected by the pandemic. Those whose turnover fell by between 9% and 15% are classified as moderately affected sectors. The rest – with declines of less than 9% – are included in the group of largely unaffected sectors.

⁶ Simulations based on information from the CBI for 2019 are used, rather than information for 2020, so as to obtain an ex ante indicator and avoid sample selection issues. In particular, the firms hardest hit by the shock might have disappeared in 2020.

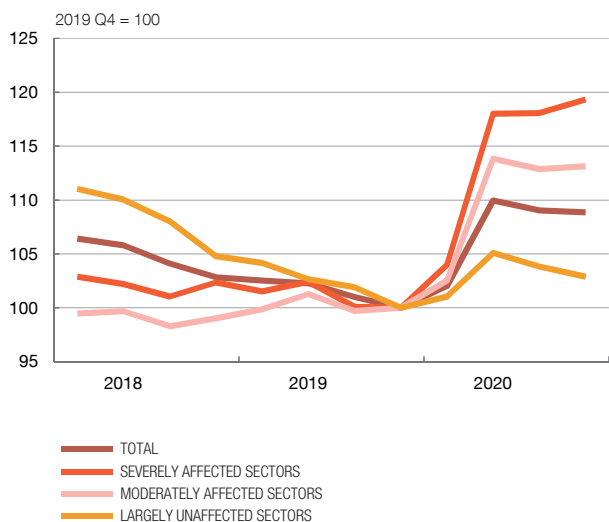
⁷ To estimate firms' liquidity needs, the different income statement items have been simulated for 2020 by taking their 2019 levels and projecting them for 2020 based on a number of assumptions. Bank debt maturities are taken from the Central Credit Register (CCR) at March 2020, while for other debt the outstanding amount of short-term debt on firms' balance sheets in 2019 (according to the CBI) is used. For more details, see Blanco, Mayordomo, Menéndez and Mulino (2021).

Chart 1

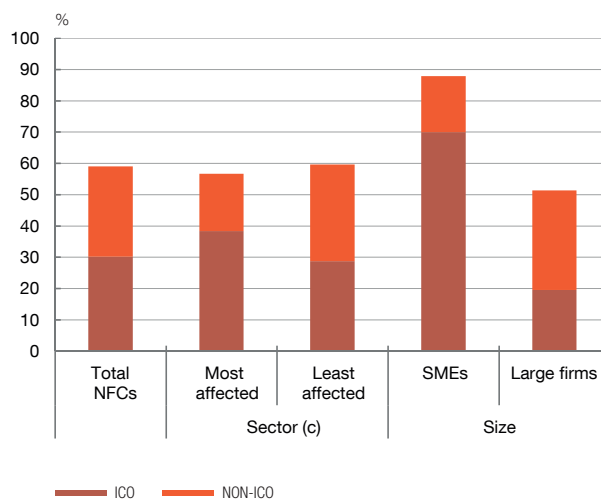
THE PRODUCTIVE SECTORS COVERED THE BULK OF THEIR LIQUIDITY NEEDS THROUGH BANK LOANS

The stock of credit granted to productive activities increased significantly in 2020, especially in the sectors most affected by the pandemic, which allowed firms to cover a significant portion of their liquidity needs. Specifically, Spanish NFCs covered 59% of these needs through bank loans maturing beyond 2020. Credit extended under the public guarantee schemes made a more significant contribution for firms with a priori more difficult access to financing, e.g. those in the sectors most affected by the crisis (38 pp, compared with 29 pp for the least affected sectors) and, above all, SMEs (70 pp, compared with 20 pp for large firms).

1 STOCK OF BANK LENDING TO PRODUCTIVE ACTIVITIES (a)



2 COVERAGE OF LIQUIDITY NEEDS THROUGH BANK LOANS. MARCH-DECEMBER 2020 (a) (b)



SOURCE: Banco de España.

- a Sectors are defined as severely affected if their turnover fell by more than 15% in 2020 and as moderately affected if their turnover fell by between 9% and 15%. Other sectors are deemed to be largely unaffected.
- b Firms' liquidity needs are the sum of the debt maturities and liquidity shortfall generated by operating activities and fixed asset investment. Only loans maturing after 2020 are included.
- c The most affected sectors are identical to the severely affected sectors in Chart 1.1, while the least affected sectors include the moderately affected and largely unaffected sectors.

The results of this exercise (see Chart 1.2) indicate that in the period March-December 2020 Spanish non-financial corporations (NFCs) covered more than half of their liquidity needs (59%) through bank loans maturing beyond 2020.⁸ The guarantee facilities managed by the ICO appear to have played a key role in achieving this high level of coverage, with the guaranteed loans covering 30% of the corporate sector's liquidity needs. The breakdown by firm characteristics shows that this percentage was comparatively higher among those firms with a priori more difficult access to financing, such as those in the sectors most affected by the crisis (38%, compared with 29% for the least affected sectors)⁹ and above all SMEs (70%, compared with 20% for large firms, which would have had access to market-based financing).

⁸ Loans maturing in 2020 are excluded as in practice they would not serve to cover liquidity needs in 2020 since they had to be repaid in that same year.

⁹ The least affected sectors are those whose turnover fell by less than 15% in 2020. All others are the most affected sectors.

For a more in-depth analysis of the role played by public guarantee facilities in financing corporate liquidity needs, a regression with firm-level information is performed, establishing the relationship between the change in credit before and after the pandemic with firm size and sector. According to the results (see Chart 2.1), the growth differential between the balance of credit raised by SMEs and large firms had widened after the pandemic, as had that same differential between firms in the most affected sectors and the rest.¹⁰ In the latter case, the differential was slightly negative before the crisis.

Regression analyses are then performed, assessing the relationship between (i) guaranteed loans as a proportion of total new lending extended by deposit institutions to the same firm in the period March-December 2020, and (ii) the banks' pre-pandemic capital ratios. The results (see Chart 2.2) indicate that deposit institutions made greater use of the public guarantees when lending to firms in the sectors most affected by the COVID-19 crisis and to smaller firms. These differences are more significant for those banks that had lower capital buffers before the crisis.¹¹ The results seem to indicate that the public guarantees contributed to sustaining the supply of credit to the firms most affected by the pandemic and to SMEs by those credit institutions that started with lower capital ratios, and which therefore could a priori have been more constrained by their solvency situation. This may owe to the guarantees providing relief in terms of the consumption of own funds associated with the new lending under the programme, since the guaranteed portion of these loans has a zero risk-weighting for capital requirement purposes.

The above evidence suggests that the guarantee facilities managed by the ICO were key to enabling many firms to cover their liquidity needs, especially those with a priori more difficult access to external financing, such as SMEs or those operating in the hardest-hit sectors.

However, firms with no bank debt before the pandemic only covered 18.3% of their liquidity needs through bank loans, of which 7.7 pp were loans extended under the programme (compared with 59% and 30.1 pp, respectively, for other firms) (see Chart 3.1).¹²

The evidence available suggests that the lower coverage via bank loans of the liquidity needs of firms without bank debt is at least partly explained by their more restricted access to lending. Certainly, even before the pandemic such firms had more difficulties in accessing bank financing compared with similar companies that did have credit relationships with banks. However, these differences could have increased post-pandemic, regardless of firms' initial financial position (Blanco, García-Posada, Mayordomo and Rodríguez-Moreno, 2023). This could partly reflect some credit market frictions, such as asymmetric information (banks have less information on firms without debt because they lack

¹⁰ For more evidence on the effect of the ICO public guarantee schemes on credit supply, see Jiménez, Laeven, Martínez-Miera and Peydró (2022) or Martín, Mayordomo and Vanasco (2023).

¹¹ Banks with lower capital buffers are those with a capital ratio below the average for the set of Spanish banks in the sample.

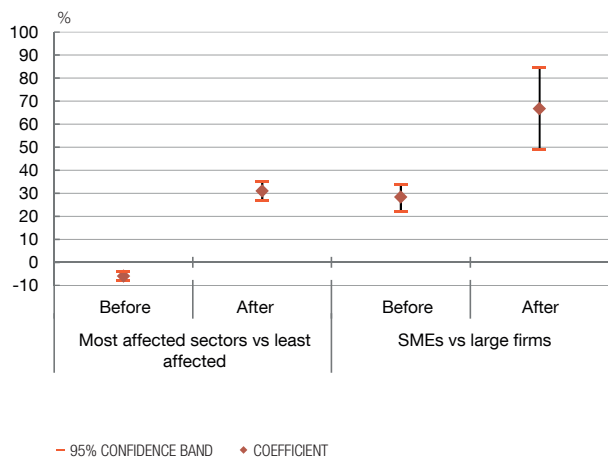
¹² In 2019, firms with no bank debt represented around 45% of all NFCs and employed more than 25% of their workers.

Chart 2

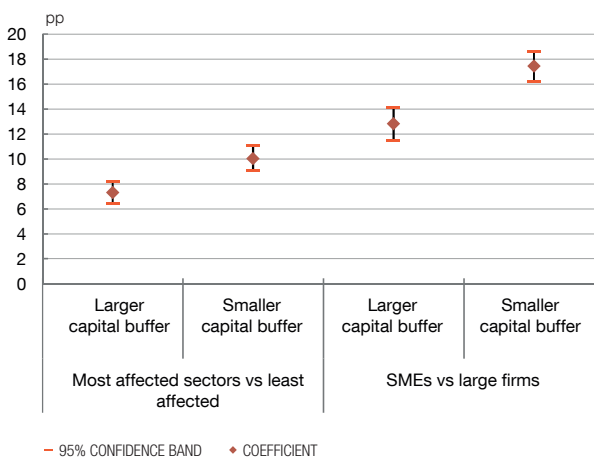
THE PUBLIC GUARANTEE FACILITIES WERE KEY TO SUSTAINING THE SUPPLY OF CREDIT AFTER THE PANDEMIC

The guarantee facilities helped to protect the firms hardest hit by the pandemic and those with more difficult access to credit (SMEs and those in the sectors most affected by the pandemic) from a tightening in such access. Banks with lower solvency levels made greater use of the ICO credit facilities in lending to firms in the most affected sectors and to smaller-sized firms.

1 ESTIMATED CHANGE IN CREDIT BEFORE AND AFTER THE PUBLIC GUARANTEE SCHEME, BY FIRM TYPE (a)



2 PROPORTION OF NEW LENDING WITH PUBLIC GUARANTEES, BY BORROWER CHARACTERISTICS AND BANK SOLVENCY (b)



SOURCE: Banco de España.

- a The diamonds are the coefficients estimated in a firm-level regression analysis in which the dependent variable is the change in the log of the firm's outstanding balance of credit (in euro) between a certain month and the same month year earlier (pre-pandemic period: February 2019-February 2020; post-pandemic period: February 2020-February 2021). The log transformation is applied by adding 1 to the firm's stock of credit, since this could be equal to 0 at one or more date. The variables of interest are firm characteristics that proxy their constraints in terms of access to financing: (i) a dichotomous variable that is equal to 1 if the firm operates in one of the sectors most affected by the pandemic, and (ii) an indicator of whether the firm is an SME. In addition to the explanatory variables of interest, firm-level controls and province-time fixed effects are used. The vertical lines denote the 95% confidence bands.
- b The diamonds are the coefficients estimated in a regression analysis in which the dependent variable is the amount of guaranteed lending as a proportion of the total credit obtained by a firm from a specific bank in a given month. The explanatory variables of interest are firm characteristics that proxy their constraints in terms of access to financing and their interaction with a dichotomous variable that takes the value of 1 for banks with smaller capital buffers (below the average for Spanish banks as a whole) and 0 otherwise (banks with larger capital buffers). The estimate is for the period March 2020-February 2021 and also uses firm-level controls and bank-time and province-time fixed effects. The vertical lines denote the 95% confidence bands.

a credit history) and banks' incentives to support the firms to which they are exposed. In any event, the lower access to credit of firms without bank debt appears to have contributed to raising their death rate.¹³ In this respect, Chart 3.2 shows that post-pandemic the probability of these firms dying increased compared with that of companies of similar characteristics but with prior bank debt.

2.2 Other effects

The guarantee scheme also impacted the average maturity and cost of firms' outstanding debt. It must be borne in mind that a significant portion of the loans backed by this scheme

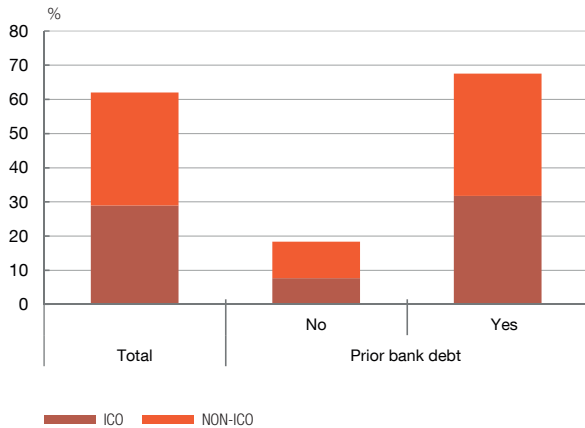
¹³ Death means when a firm discontinues its activity, based on the information available in the CBI on its demographic situation. Specifically, a firm is deemed to have discontinued its activity if it is wound up, has been deregistered or is dormant.

Chart 3

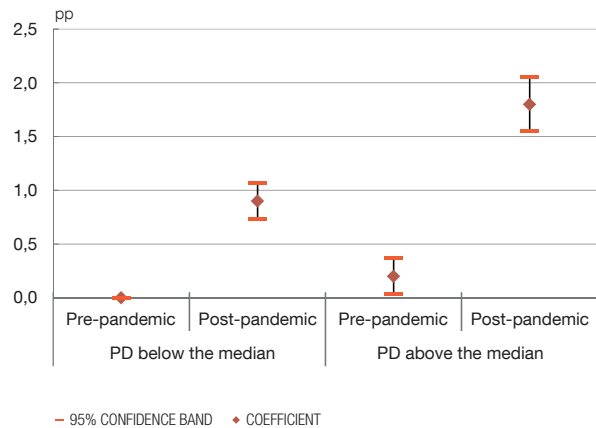
FIRMS WITHOUT PRIOR CREDIT RELATIONSHIPS COVERED A LOW PROPORTION OF THEIR LIQUIDITY NEEDS VIA BANK LENDING

Firms without bank debt pre-pandemic only covered 18% of their liquidity needs via bank loans. The scant contribution of bank lending to mitigating the liquidity problems of such firms was reflected in the higher proportion of firms without bank credit relationships that exited the market after the outbreak of the pandemic compared with companies with bank debt. This increase is more notable in the riskier firms segment, but is also observed in the firms with lower PDs.

1 COVERAGE OF LIQUIDITY NEEDS VIA BANK LOANS BETWEEN MAR-20 AND DEC-20 (a)



2 ESTIMATED PROPORTION OF FIRMS WITHOUT BANK DEBT THAT EXITED THE MARKET IN EXCESS OF THAT OBSERVED FOR FIRMS WITH BANK DEBT, BY PD (b)



SOURCE: Banco de España.

- a Firms' liquidity needs are defined as the sum of the debt maturities and the liquidity shortfall generated by both operating activity and investment in fixed assets. Only loans maturing after 2020 are considered.
- b The diamonds correspond to the coefficients estimated in a differences-in-differences regression of the COVID-19 pandemic in which the dependent variable is a categorical variable that takes the value 1 if the firm dies and 0 otherwise. Specifically, for the pre-pandemic period the dependent variable takes the value 1 if the firm exited the market in 2018 or 2019, whereas in the post-pandemic period the dependent variable equals 1 if the firm died in 2020 or 2021. The explanatory variables of interest are i) a categorical variable that takes the value 1 if the firm did not have bank debt in either December 2018 or in any of the four preceding years and ii) the interaction of this variable with a categorical variable taking the value 1 in the post-pandemic period. Firms with a propensity score matching of between 0.1 and 0.9 are used in all the columns. The first and second columns depict the results obtained pre- and post-pandemic, respectively, for a sample of firms with a PD below the median of the distribution. The third and fourth columns are similar to the first and second, but use a sample of firms with a PD above the median. PD is estimated using the methodology in Blanco, Fernández, García-Posada and Mayordomo (2023). All the specifications include a series of firm-level controls (size, age, solvency, liquidity, profitability, tangible assets and payment of taxes), in addition to sector-location-size-time fixed effects. For the pre-pandemic period we use firm-level controls at 2018, whereas for the post-pandemic period we use information from 2019. The vertical lines indicate the 95% confidence bands.

were used to cover debt maturities. The conditions (maturities and interest rates) of these guaranteed loans were more favourable than those of outstanding debt and new unbacked loans. Therefore, the scheme helped extend the maturities and lower the average cost of firms' debt. Specifically, the average maturity of the backed loans exceeded 4.5 years, well above that of outstanding bank loans in 2019 (2.1 years). As a result, the average maturity of outstanding bank loans increased to 2.4 years at the end of 2020. The average interest rate for loans with public guarantees was 37 basis points (bp) lower than the rate for unbacked loans, despite the maturity of the former being on average almost 3.5 years longer.

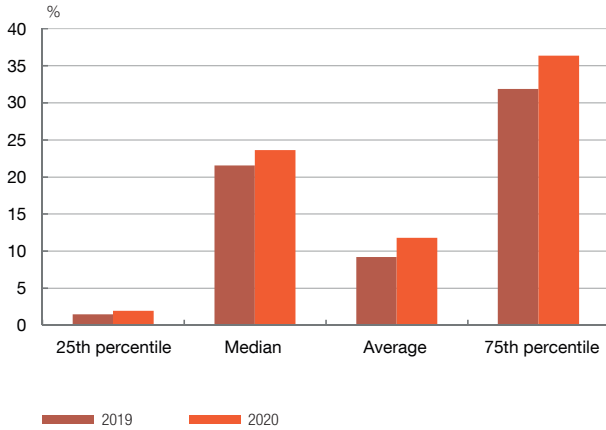
Lastly, the information available suggests that the financing raised by many firms in 2020 was not only used to cover their most pressing liquidity shortfalls, but that at least some of the funds received were also used to increase liquidity buffers for precautionary reasons. Thus, in 2020

Chart 4

THANKS TO THE PUBLIC GUARANTEE SCHEME FIRMS HAD A FAVOURABLE LIQUIDITY POSITION GOING INTO 2021

The public guarantee scheme enabled firms to use a portion of the funds received to increase their liquidity buffers for precautionary reasons. These liquidity buffers were largely built up through external financing, as larger increases in the liquidity ratio are observed at those firms with a greater increase in their indebtedness, even in the sectors severely affected by the pandemic. Thanks to these developments, firms had a more comfortable liquidity position going into 2021.

1 DISTRIBUTION OF THE LIQUIDITY RATIO. CBI FIRMS (a)



2 RELATIONSHIP BETWEEN THE INCREASE IN BORROWING AND IN LIQUIDITY. 2020 (b) (c)



SOURCE: Banco de España.

- a The liquidity ratio is calculated as firms' cash and cash equivalents as a percentage of total assets.
- b Each dot on the chart denotes the average change in debt and liquidity ratios for a set of firms whose debt as a percentage of total assets changed within a given interval.
- c Sectors severely affected by the COVID-19 crisis are those whose turnover fell by more than 15% in 2020, moderately affected ones are those whose turnover fell by between 9% and 15%, and largely unaffected sectors are the rest.

the median liquidity ratio¹⁴ of CBI firms increased by 2 pp, to 23.6% (see Chart 4.1). Chart 4.2 depicts a positive correlation between the change in the firms' liquidity ratio and debt growth for those firms that arranged further interest-bearing external financing. This result is observed across all sectors, although, as expected, it appears that firms in the sectors hardest hit by the pandemic used a smaller proportion of new borrowing to increase liquidity buffers.

¹⁴ The liquidity ratio is calculated as cash and cash equivalents as a percentage of total assets.

3 Effects of the direct aid scheme

During the health crisis, the Spanish authorities also adopted various measures to bolster business solvency, including the approval, in July 2020, of the €10 billion Strategic Companies Solvency Support Fund, managed by SEPI (the State Industrial Holdings Corporation). Another €1 billion recapitalisation fund, in this case managed by COFIDES and intended for mid-caps, and a €7 billion direct aid scheme were approved in June 2021. The two recapitalisation funds were intended for large firms. The funds were allocated on the basis of general criteria¹⁵ and a case-by-case analysis of the applicants' economic and financial position and their business outlook.

By contrast, the direct aid scheme was essentially aimed at sole proprietors and SMEs, resulting in a particularly high number of potential beneficiaries. In principle, the eligibility criteria for this aid were: (i) a drop in turnover of more than 30% in 2020; (ii) belonging to certain sectors particularly affected by the pandemic; and (iii) recognising profits in 2019. However, the regional governments, which managed the direct aid scheme, had some flexibility in the application of these criteria. On information provided by the regional governments, of the €5 billion of this scheme's funds allocated between May and late 2021, almost €4.3 billion had been distributed to business entities, mainly SMEs.¹⁶ The aid received was for a specific purpose: it had to be used to pay down the new debt incurred in 2020. Therefore, the accounting impact of the aid was to increase the capital ratio of the beneficiaries.

To assess the effects of the direct aid scheme on SME solvency, we used CBI data for 2020, which include a total of 930,000 SMEs. We also have individual data on the direct aid identifying the beneficiaries and the amounts received, which we downloaded from the regional governments' websites. The SMEs included in the CBI sample received some €3.2 billion of the €4.3 billion distributed to firms.¹⁷ Using this information, we estimated, first, the proportion of SMEs in the sample analysed with a capital shortfall at the end of 2020 as a result of the COVID-19 crisis and the size of such shortfall. A firm was deemed to have a capital shortfall when the following three conditions related to its capital ratio (the ratio of equity¹⁸ to assets) were met: it was positive in 2019;¹⁹ it fell in 2020; and it stood below 10% in 2020.²⁰ The amount of the capital shortfall is the volume required for the firm's capital ratio to recover its 2019 level, with a limit of 10%.

The results of the exercise are depicted in Chart 5. Specifically, Chart 5.1 indicates that the capital shortfall – stemming from the COVID-19 crisis – of the SMEs in the sample amounted

¹⁵ To qualify as beneficiaries of these recapitalisation funds, firms (i) must not have been classified as troubled at 31 December 2019, and (ii) were required to demonstrate that, in the absence of the temporary public support requested from the fund, they would exit the market or encounter serious difficulties to continue operating. In addition, in the case of the SEPI-managed fund, they had to substantiate that a forced exit would have a considerable adverse impact on economic activity or employment, at national or regional level, and demonstrate their medium and long-term viability.

¹⁶ This amount does not include the figures for Galicia as they are not available.

¹⁷ The other CBI firms received around €0.3 billion.

¹⁸ Equity includes own funds, valuation adjustments and grants, donations and legacies received.

¹⁹ This requirement was introduced to exclude firms that were already insolvent before the COVID-19 crisis.

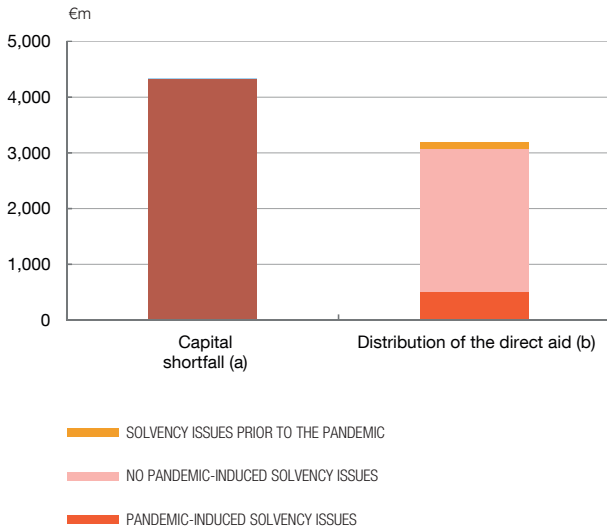
²⁰ This threshold corresponds approximately to the 25th percentile of the distribution of the CBI firms' capital ratio in 2019. Alternative definitions of capital shortfall were used and the qualitative findings did not change.

Chart 5

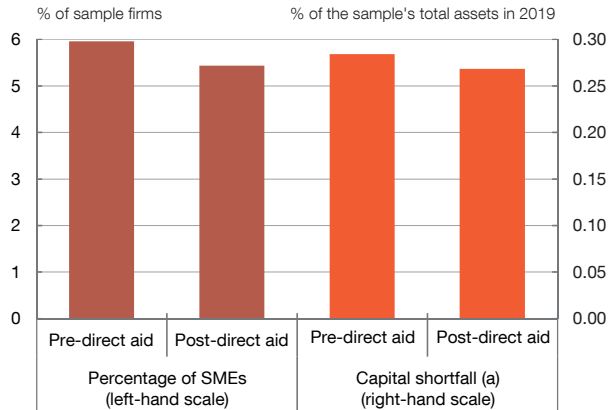
THE DIRECT AID SCHEME ONLY MODERATELY REDUCED THE DETERIORATION IN SMEs' SOLVENCY

Around €3.2 billion of direct aid was disbursed to CBI SMEs under this scheme. Only €0.5 billion of the €3.2 billion were distributed to firms with solvency issues stemming from the COVID-19 crisis. Therefore, the scheme contributed moderately to reducing SMEs' solvency issues. Specifically, the percentage of SMEs that had a capital shortfall after the pandemic fell relatively modestly (from 6.0% to 5.4%) and their overall capital shortfall only fell by 1 bp, to 0.27% of the sample firms' total assets in 2019.

1 CBI SMEs' CAPITAL SHORTFALL IN 2020 AND DISTRIBUTION OF THE DIRECT AID



2 CBI SMEs WITH A CAPITAL SHORTFALL IN 2020



SOURCE: Banco de España,

- a Firms have a capital shortfall as a result of the COVID-19 crisis when their capital ratio (equity / total assets) was positive in 2019 and it fell in 2020 to below 10%. The amount of the capital shortfall is the volume required for the firm's capital ratio to recover its 2019 level, with a limit of 10%.
- b Firms have pandemic-induced solvency issues if their capital ratio was positive in 2019 and it fell in 2020 to below 10%. Firms with no pandemic-induced solvency issues are those whose capital ratio was positive in 2019 and it did not fall in 2020 or, if it did, it still stood above 10%. Lastly, firms with solvency issues prior to the pandemic are those whose capital ratio was zero or negative in 2019.

to €4.3 billion at end-2020. Of the €3.2 billion of aid granted to CBI SMEs, only €0.5 billion were distributed to firms with a capital shortfall because of the health crisis. However, the bulk of this aid (€2.6 billion) went to firms without solvency issues (those whose capital ratio was positive in 2019 and had not fallen in 2020 or, if it had, it stood above 10%). Lastly, €0.1 billion of direct aid was distributed to firms whose capital ratio was already zero or negative in 2019.

Pre-direct aid, the capital shortfall of SMEs with solvency issues as a result of the COVID-19 crisis amounted to 0.28% of the sample firms' total assets in 2019 (see Chart 5.2). After receiving the aid, this percentage fell by only 1 bp. The percentage of firms with a capital shortfall due to the COVID-19 crisis fell from 6% to 5.4% after the direct aid was distributed.

In short, these findings suggest that although the volume of direct aid distributed would have potentially allowed for the coverage of a very considerable portion of the capital shortfall of firms with solvency issues stemming from the COVID-19 crisis, such aid was not allocated efficiently, as only a small portion of it was used to cover the capital shortfall of firms with solvency issues.

References

- Blanco, Roberto, Sergio Mayordomo, Álvaro Menéndez and Maristela Mulino. (2021). "Impact of the COVID-19 crisis on Spanish firms' financial vulnerability". Documentos Ocasionales, 2119, Banco de España. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSeriadas/DocumentosOcasionales/21/Files/do2119e.pdf>
- Blanco, Roberto, Miguel García-Posada, Sergio Mayordomo and María Rodríguez-Moreno. (2023). "Access to credit and firm survival during the Covid-19 crisis: the case of zero-bank-debt firms". Mimeo.
- Blanco, Roberto, Elena Fernández Ortiz, Miguel García-Posada and Sergio Mayordomo. (2023). "An Estimation of the Default Probabilities of Spanish Non-financial Corporations and its Application to Evaluate Public Policies". Documentos Ocasionales, Banco de España. Forthcoming.
- Jiménez, Gabriel, Luc Laeven, David Martínez-Miera and José-Luis Peydró. (2022). "Public Guarantees, Relationship Lending and Bank Credit: Evidence from the COVID-19 Crisis". Discussion Papers, DP17110, CEPR. <http://dx.doi.org/10.2139/ssrn.4057530>
- Martin, Alberto, Sergio Mayordomo and Victoria Vanasco. (2023). "Banks vs. Firms: Who Benefits from Credit Guarantees?". Economics Working Paper Series, 1862, Department of Economics and Business, Universitat Pompeu Fabra. <https://econ-papers.upf.edu/papers/1862.pdf>

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