

A disaggregated analysis of business investment since the outbreak of the pandemic

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Rationale

Business investment in Spain has proven considerably weak in recent years and is still below pre-pandemic levels. This article analyses investment dynamics in Spain until 2022 drawing on firm-level data from the Banco de España Central Balance Sheet Data Office.

Takeaways

- The disaggregated data from the Central Balance Sheet Data Office can be used to identify the characteristics of the firms that adjusted their investment patterns the most from the outbreak of the pandemic until 2022.
- In this period, firms' investment decisions became more sensitive to their economic situation (proxied here by their sales and cash flow).
- Conversely, the link between firms' investment decisions and financial position (proxied here by their debt level and debt burden) remained unchanged.
- Investment by young firms proved particularly weak in the period analysed, and this led to a narrowing of the positive gap between their investment drive and that of other firms.

Keywords

Business investment, pandemic, economic and financial situation.

JEL classification

E22, E44, H32.

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Introduction

Business investment (an essential component of aggregate demand and a key determinant of productivity growth) has shown considerable weakness in Spain recently and is still below its end-2019 level. The outbreak of the COVID-19 pandemic, the emergence of some global supply chain bottlenecks, the energy crisis and the rise in production costs, the high uncertainty surrounding economic conditions (Fernández-Cerezo and Izquierdo, 2023) and the increase in interest rates in recent years (Banco de España, 2022), among other factors, appear to have contributed to this weakness.

In this setting, this article aims to analyse investment in Spain drawing on disaggregated, firm-level data from the Banco de España's Central Balance Sheet Data Office integrated database (CBI).¹ In particular, the CBI contains comprehensive information on the financial statements and profit and loss accounts of almost 800,000 Spanish non-financial corporations on average for each financial year up to and including 2022.

Business investment since the outbreak of the pandemic

The disaggregated CBI data analysed here can be used to identify the characteristics of the firms that have adjusted their investment patterns the most since the outbreak of the pandemic. The analysis focuses on tangible assets, i.e. capital goods and construction, which account for the bulk of total investment by the corporate sector and whose market value is easier to approximate based on the book value recorded in firms' balance sheets. A comparison of business investment according to National Accounts with investment in tangible fixed assets obtained by aggregating individual data from the CBI shows that the two aggregates generally follow a similar pattern, although the variations in recent years were somewhat more pronounced for CBI firms (see Chart 1.a).

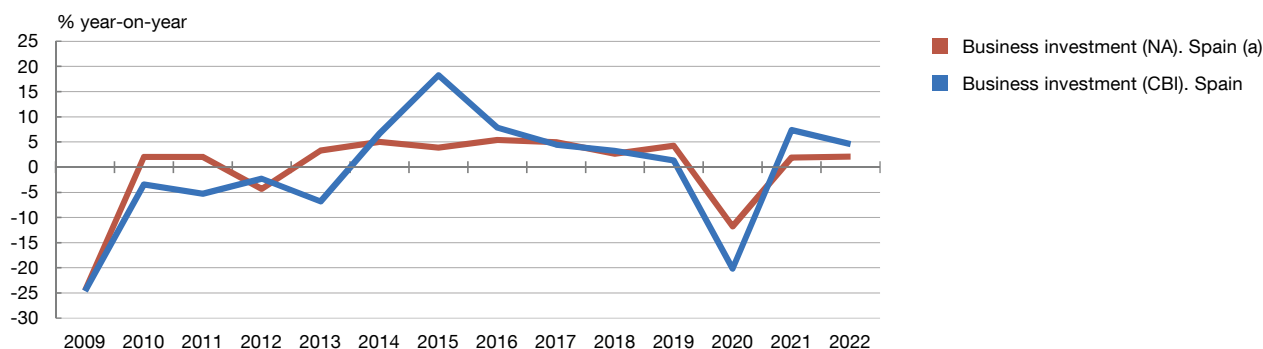
In particular, the CBI data show that in 2020 there was a significant drop in both the proportion of firms with positive investment flows – the extensive margin (see Chart 2.a) – and the average amount invested by investing firms – the intensive margin (see Chart 2.b). In fact, within this group, the gross amount invested by the median firm in 2020 was insufficient to cover the depreciation of the previously installed capital, resulting in negative net investment. Since then, investment has recovered, albeit incompletely: in 2022 neither the extensive nor the intensive margin had returned to pre-pandemic levels.

¹ Alongside this article, Banco de España (2024) describes recent developments in investment in Spain, by component and by sector (public/private), drawing on the aggregated information provided by the National Accounts.

Chart 1

Productive investment, and business investment in particular, declined markedly during the pandemic, albeit less than during the 2008-2012 crisis

1.a Comparison of the annual change in business investment (in nominal terms)



SOURCES: INE and Banco de España.

a Business investment is proxied by private investment, which includes investment in capital goods, investment in construction other than housing and investment in other products, such as intangible assets. The aggregate obtained from the CBI does not include intangible assets.



The sector in which firms operate was a key determinant of the decline in business investment during the pandemic.² In 2020 Spanish firms' average investment rates (i.e. the ratio of tangible fixed asset and real estate investment to the stock of such capital at the start of each period)³ fell steeply in sectors where the health crisis had a greater impact on turnover (i.e. those requiring greater social contact, such as hospitality, transportation or recreational services). However, these sectoral differences in investment rate gaps relative to pre-pandemic levels tended to diminish from 2021 onwards, so that by 2022 the sectors most affected by the pandemic no longer had the largest gaps compared with 2019. Average investment rates remained below 2019 levels in virtually all sectors of activity, particularly in the agricultural, construction and real estate sectors (see Chart 2.c).

How has the link between firms' economic and financial position and their investment decisions changed in recent years?

This section analyses the link between investment – both the extensive and the intensive margins – and its main determinants, making a distinction between the pre-pandemic period (2014-2019) and the most recent period (2020-2022). First, a linear probability model is estimated in which the dependent variable is a dummy variable that shows whether or not a firm has invested (the extensive margin). Second, a model is estimated based on the sample of investing firms where the dependent variable is the ratio of the investment rate to the initial capital stock (the intensive margin). Both regressions include as explanatory variables various

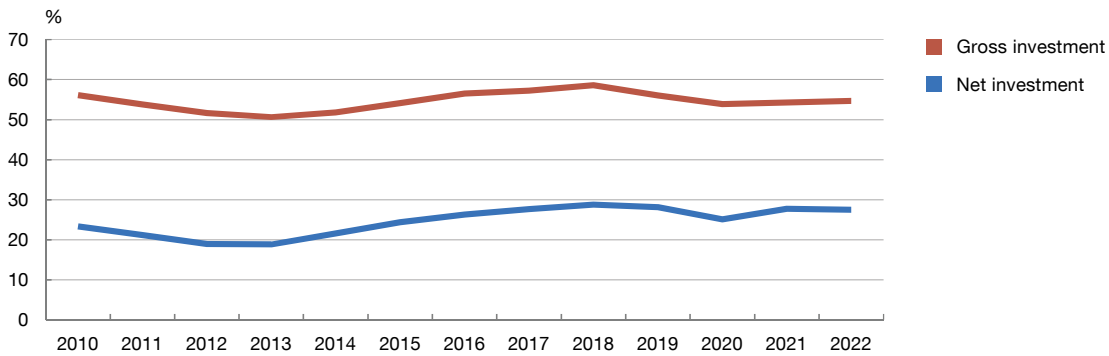
² For more details about the economic impact of COVID-19 on Spanish firms, see Fernández Cerezo, González, Izquierdo and Moral-Benito (2021).

³ The market value of capital stock is estimated based on its book value, using the perpetual inventory method.

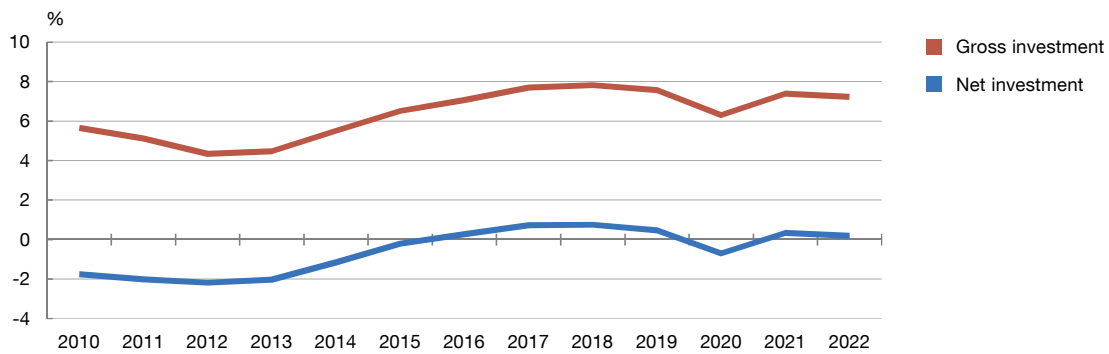
Chart 2

2020 saw a sharp fall both in the proportion of firms that decide to invest and in investment rates at firms where such rates are positive

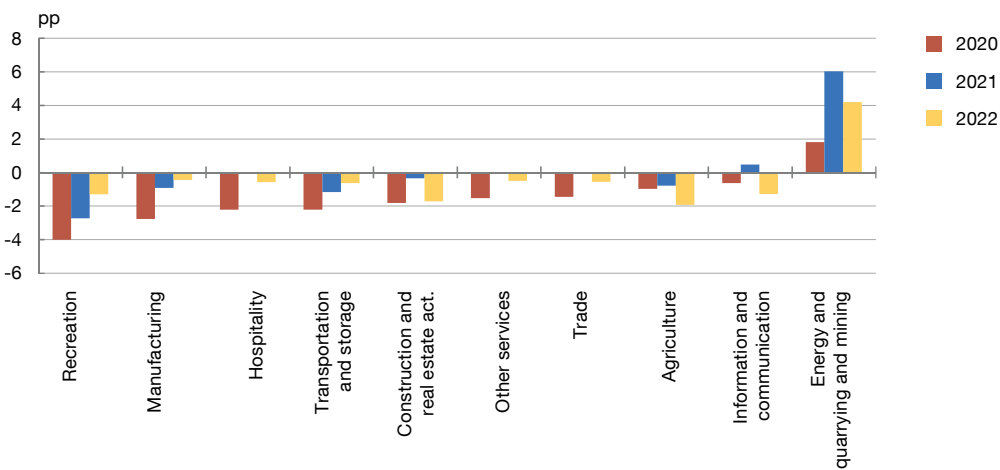
2.a Proportion of firms with positive investment



2.b Median rate of investment (firms with positive investment flows)



2.c Variation with respect to 2019 in the average rate of investment by sector of activity (a)



SOURCE: Banco de España.

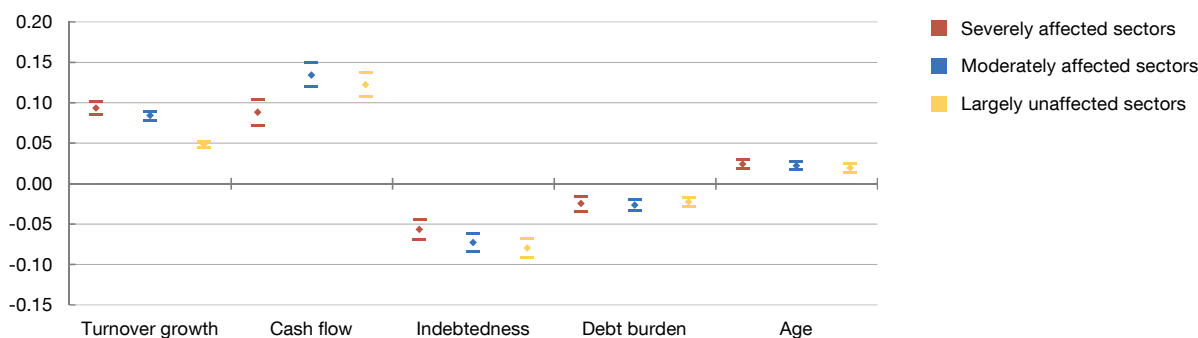
a The chart depicts the change with respect to 2019 in the average investment rates of firms with positive investment.



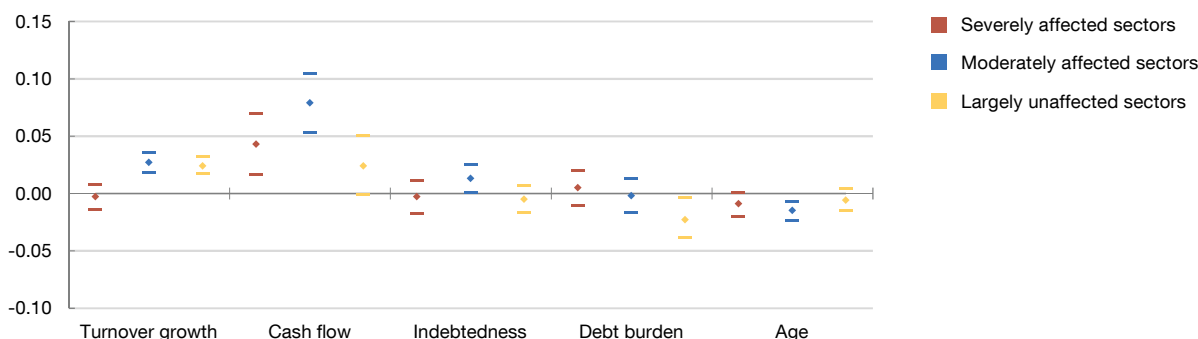
Chart 3

The link between the economic situation and the decision to invest became stronger in the period 2020-2022

3.a Impact on the probability of investing of various variables relating to the economic and financial situation. 2014-2019 (a)



3.b Change since the pandemic in the impact on the probability of investing of various variables (a)



SOURCE: Banco de España.

a The diamonds represent the estimated coefficients associated with each variable, while the dashes indicate the 95% confidence interval for that coefficient. The coefficients have been obtained from an OLS estimation linking the decision to invest to the variables presented in the chart. All the explanatory variables have a one-period lag, except for turnover growth. The specification also includes various fixed effects (time, size and sector). The sectors most (least) affected by the pandemic are defined as the top (bottom) one-third of all sectors in terms of their median drop in turnover in 2020.



indicators of firms' economic (turnover growth and cash flow) and financial situation (debt burden and debt levels) and a dummy variable that indicates whether the firm is young.⁴ A number of fixed effects that control for other firm characteristics, both observable and unobservable, are also included.⁵

In the case of the extensive margin, the results reflect that, in line with the evidence found in the literature, firms with higher turnover growth and those with higher cash flow (variables positively correlated with firms' growth potential) are more likely to invest (see Chart 3.a). Moreover, the link between a firm's economic situation and the decision to invest became stronger in 2020-2022,

4 A young firm is defined for each year as a firm created four years previously or less.

5 Specifically, the size of the firms is controlled for and year and firm fixed effects are included.

compared with the period 2014-2019 (see Chart 3.b),⁶ in line with what was observed during the global financial crisis (Dejuán, Menéndez and Mulino, 2018). Specifically, turnover growth and cash flow had a more marked effect on decisions to invest in 2020-2022 than in the preceding years. These results suggest that firms' investment decisions became more sensitive to economic performance in a context of high uncertainty about the growth outlook.

Meanwhile, firms in a less sound financial position, (i.e. those with higher levels of debt or interest burden) are comparatively less likely to invest, in line with the negative impact of a higher debt burden on access to new financing and on profits generated. Moreover, the link between firms' financial position and the extensive margin –which typically becomes more pronounced in recessionary periods– does not appear to have significantly changed during the pandemic (see Chart 3 b). This contrasts with what was observed during the global financial crisis, when, in a setting of substantial deterioration in firms' financial position and significant tightening of financing conditions, this link became stronger (Dejuán, Menéndez y Mulino, 2018). In this respect, the different economic policy measures implemented during the pandemic appear to have played a crucial role in explaining why financing conditions had a lesser impact on firms' investment decisions than during the global financial crisis. These include, for example, the measures adopted by the European Central Bank (ECB) to preserve favourable financing conditions for all economic agents and the Official Credit Institute (ICO) guarantee scheme introduced in Spain to facilitate access to external financing.⁷ Of the firms that benefited from the guarantee facilities to cover their liquidity needs in the two-year period 2020-2021, the proportion that went on to invest was estimated to be somewhat higher (by around 1.5 pp) than among other firms (after controlling for a set of firm characteristics), suggesting that these guarantees may have helped firms' stick to their investment decisions. In the case of guarantees targeted at meeting firms' investment needs, the gap is much wider (around 10 pp), although this is very probably due to the selection bias in such guarantee applications (since applicant firms were mainly those planning on undertaking such investments).

As regards the intensive margin, the link between firms' investment drive and their financial position before the pandemic appears to have weakened during the health crisis (see Charts 4.a and 4.b), in line with what was observed during the global financial crisis (Dejuán, Menéndez and Mulino, 2018). This would be consistent with an environment of heightened uncertainty, downward revisions to projected growth and restrictions on activity, which appears to have limited the need to significantly increase firms' productive capacity, and translated into a decline in firms'

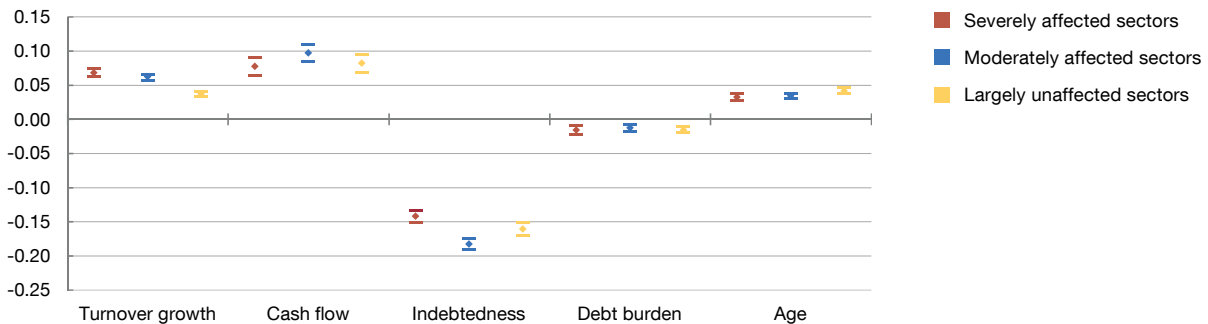
6 To estimate the differential impact on investment of each of the variables that capture the financial position of firms during the pandemic, a dummy variable taking the value 1 in the period 2020-2022 is created to interact with each of these variables. The coefficients for the probability of investing (extensive margin) are shown in Chart 3.b and those for the investment rate (intensive margin) are shown in Chart 4.b. In the period 2020-2022, the impact of each of these economic and financial position variables on gross capital formation is represented by the sum of the coefficients shown in Charts 3.a and 3.b for this indicator (or in Charts 4.a and 4.b in the case of the investment rate).

7 On 17 March 2020, the Spanish Government approved a €100 billion public guarantee scheme, managed by the ICO, for loans to firms and the self-employed to help cover their liquidity needs. Subsequently, in July of that year, it approved another scheme amounting to €40 billion, mainly to address firms' financing needs for new investments. These schemes allowed financial institutions to cover a high proportion (up to 80% in the case of financing extended to SMEs and the self-employed) of the potential losses associated with the loans extended under these facilities. For a more in-depth view of the impact on Spanish firms of the public guarantee and direct aid schemes implemented during the pandemic, see Blanco and Mayordomo (2023).

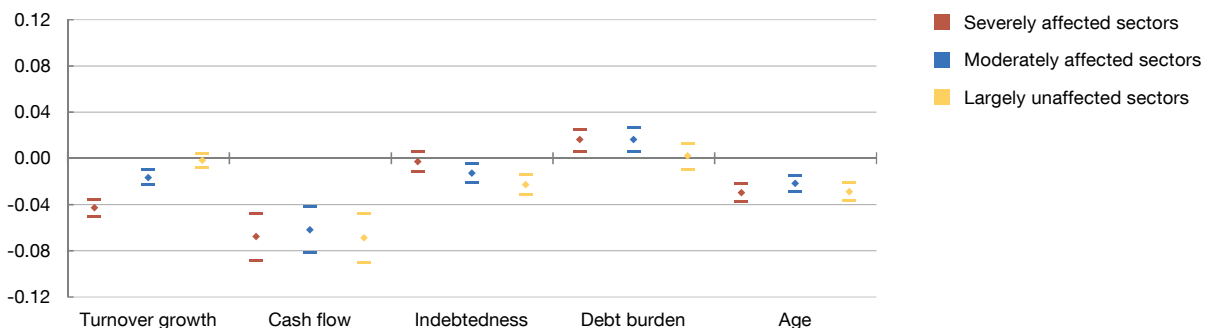
Chart 4

In the case of the intensive margin, the link between firms' investment drive and financial situation appears to have weakened, as it did during the global financial crisis

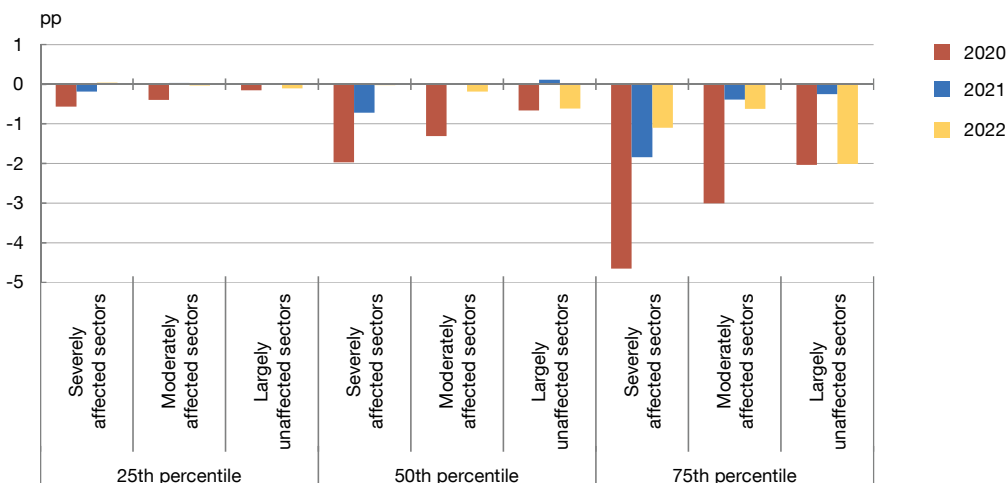
4.a Impact on the investment rate of various variables relating to the economic and financial situation. 2014-2019 (a)



4.b Change since the pandemic in the impact on the probability of investing of various variables (a)



4.c Distribution of investment rates for firms with positive investment flows. Change with respect to 2019 in the 25th, 50th and 75th percentiles



SOURCE: Banco de España.

a The diamonds represent the estimated coefficients associated with each variable, while the dashes indicate the 95% confidence interval for that coefficient. The coefficients have been obtained from an OLS estimation linking the decision to invest by firms with a positive investment flow to the variables presented in the chart. All the explanatory variables have a one-period lag, except for turnover growth. The specification also includes various fixed effects (time, size and sector). The sectors most (least) affected by the pandemic are defined as the top (bottom) one-third of all sectors in terms of their median drop in turnover in 2020.



investment drive, which was particularly sharp in those with a higher level of investment (typically those that perform better). Consequently, the dispersion in the investment rates of firms that invest appears to have diminished (see Chart 4.c). As in the case of the extensive margin, the relationship between firms' financial position and their investment drive did not change significantly following the outbreak of the pandemic,⁸ in contrast to what occurred in the wake of the global financial crisis. This may be due to firms' stronger initial financial positions in this crisis than in the previous one and to the milder tightening of financing conditions.

Lastly, the pandemic seems to have had a more severe effect on the investment patterns of young firms, which have a higher marginal propensity to invest than other firms, as the need to increase the stock of productive capital is greater in firms' early years of activity. Thus, the positive gap between the investment drive of young firms and that of other firms has narrowed since the onset of the pandemic (see Chart 4 b). This result would be consistent with the greater impact that the pandemic had on the activity and employment of young firms (Fernández Cerezo, González, Izquierdo and Moral-Benito, 2021). Similarly, the link between a firm's age and the decision to invest appears to have been strengthened since the health crisis, i.e. the marginal propensity to invest has remained higher in young firms than in other firms, but the gap between them has narrowed compared with previous years (see Chart 3.b).

REFERENCES

- Andersson, Malin, Stephen Byrne, Lorenz Emter, Belén González-Pardo, Valerie Jarvis and Nico Zorell. (2023). "Intangible assets of multinational enterprises in Ireland and their impact on euro area GDP". *ECB Economic Bulletin*, Issue 3, 2023, European Central Bank. https://www.ecb.europa.eu/press/economic-bulletin/focus/2023/html/ecb.ebbox202303_02~3404c284d0.en.html
- Banco de España. (2022). "Positive and negative aspects of the recovery in Spain". In Banco de España, *Annual Report 2021*, pp. 62-100. <https://repositorio.bde.es/handle/123456789/21109>
- Banco de España. (2024). "Chapter 2. Structural challenges facing the Spanish economy". In Banco de España, *Annual Report 2023*, pp. 91-159. https://www.bde.es/f/webbe/SES/Secciones/Publicaciones/PublicacionesAnuales/InformesAnuales/23/Files/InfAnual_2023_Cap2_En.pdf
- Blanco, Roberto, and Sergio Mayordomo. (2023). "Evidence on the impact of the public guarantee and direct aid schemes on Spanish firms during the COVID-19 crisis". Documentos Ocasionales, 2317, Banco de España. <https://www.bde.es/f/webbe/SES/Secciones/Publicaciones/PublicacionesSeriadas/DocumentosOcasionales/23/Files/do2317e.pdf>
- Dejuán, Daniel, Álvaro Menéndez and Maristela Mulino. (2018). "Investment and financing of Spanish non-financial corporations: an analysis using firm-level data". *Economic Bulletin - Banco de España*, 3/2018, Analytical Articles. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/InformesBoletinesRevistas/ArticulosAnaliticos/2018/T3/Files/beaa1803-art19e.pdf>
- Fernández Cerezo, Alejandro, Beatriz González, Mario Izquierdo and Enrique Moral-Benito. (2021). "The economic impact of COVID-19 on Spanish firms according to the Banco de España Business Activity Survey (EBAE)". *Economic Bulletin - Banco de España*, 1/2021, Analytical Articles. <https://repositorio.bde.es/handle/123456789/15352>
- Fernández Cerezo, Alejandro, and Mario Izquierdo. (2023). "Encuesta a las empresas españolas sobre la evolución de su actividad: segundo trimestre de 2023". *Economic Bulletin - Banco de España*, 2023/Q2, 10. <https://doi.org/10.53479/30209>

⁸ Although in some cases the estimated differential impact for indebtedness or the debt burden in 2020-2022 is significant, it is very low in quantitative terms.

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