

SENSITIVITY ANALYSIS OF THE BANK DEBT BURDEN OF FIRMS ENGAGED IN CONSTRUCTION AND REAL ESTATE ACTIVITIES

Spanish deposit institutions' credit exposure to the real estate activities and construction sectors has decreased considerably since the global financial crisis (see Chart 1). However, it remains relevant to financial stability, due to both its size as a percentage of GDP (6.5% in December 2023) and its share of total bank finance to the private sector in business in Spain (8.3% at the same date).

The significance of this sectoral exposure in Spain and the evidence that has become available since the global financial crisis, linking real estate market imbalances to an increased likelihood of deeper recessions and also slower recoveries,¹ mean that it is important to assess the resilience of firms in these sectors to economic and/or financial shocks, such as the interest rate hiking cycle since 2022 H2.

This box describes, first, the financial position of these firms drawing on the latest information available (data at end-2022 and end-2023), homing in on their interest coverage ratio, among other indicators. It then analyses the effects of different types of shocks (to interest rates and EBITDA generation) on their debt burden.

To do so, it uses granular data on the volume and cost of these firms' bank borrowing, available in the Banco de España's Central Credit Register (CCR), together with information from their balance sheets and income statements drawn from the Banco de España's Central Balance Sheet Data Office integrated database (CBI). As the CBI does not have financial and economic information on all firms with outstanding loans in the CCR, different parts of the analysis, in particular that referring to the shocks, are conducted on the sample of firms present in both databases.^{2,3,4} In any event, this exercise constitutes a lower bound of these firms' debt burden, as it only

analyses their bank debt and other financial obligations may exert further payment pressures on them.

The total CCR data reveal that bank lending to firms linked to the real estate activities and construction sectors amounted to €113 billion at end-2023. It is mostly arranged as floating-rate loans (close to 70% of the total). Therefore, at end-2023, these firms had already largely absorbed the increase in interest rates associated with the monetary tightening cycle the European Central Bank launched around two years ago. This preponderance of floating-rate loans means the sectors' financing costs are highly sensitive to changes in market rates. Meanwhile, rollover risks appear to be contained, at least in the short term, as the vast majority (somewhat more than 90%) of the bank debt of such firms has a residual maturity of over one year (see Chart 2).

To analyse the debt service capacity of these firms, we need to study not only their financial obligations, but also the gross operating profit that they generate and the ratio between the two. To do so, an analysis was conducted of the distribution of the interest coverage ratio (ratio of EBITDA to interest expenditure) in 2019 and 2022. An interest coverage ratio of below 1 indicates that a firm does not generate enough EBITDA to pay the interest expenses on its bank debt.

This ratio is significantly more dispersed in 2022 (last year with complete data for the CBI) than in 2019 (see Chart 3). According to this metric, just over one-third of bank financing to the sectors analysed is to firms with low debt service capacity, i.e. firms with interest coverage ratios of below 1 or even negative ratios. Meanwhile, there are a significant number of firms with an interest coverage ratio of above 1 (most firms actually have a ratio of over 2). Other financial ratios for these sectors,

1 See, for example, Ò. Jordà, M. Schularick and A. M. Taylor. (2016). "The great mortgaging: housing finance, crises and business cycles". *Economic Policy*, 31(85), pp. 107-152.

2 The CBI contains financial and economic information reported voluntarily by Spanish non-financial corporations, in addition to the information that firms and groups are required to report to the Mercantile Registry or to the National Securities Market Commission. The complete CBI sample is collected annually and its latest wave refers to 2022. By contrast, the CCR contains information on the loans, claims, guarantees and collateral of each reporting agent vis-à-vis its customers, with minimum reporting thresholds, reported monthly.

3 The sample of firms engaging in real estate activities and construction present in both the CCR and the CBI account for one-third of the credit exposures to these sectors in the CCR at end-2023. They are bigger than the other firms, in terms of their turnover (3.5x), headcount (4.3x) and total assets (1.1x). These exposures also have a better credit classification (higher share of performing exposures: 89%, versus 79% for all the exposures to these sectors in the CCR).

4 In 2022 the bank debt of the sample firms reported to the CCR accounted for close to 80% of total bank financing reported by these firms to the CBI, and around 45% of long-term borrowing and short-term interest-bearing financing.

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such as the debt-to-assets ratio, also show high cross-firm heterogeneity.⁵

To supplement the foregoing descriptive analysis, the interest coverage ratio is projected for 2023 onwards. To

Chart 1
Bank lending to real estate activities and construction firms (a)

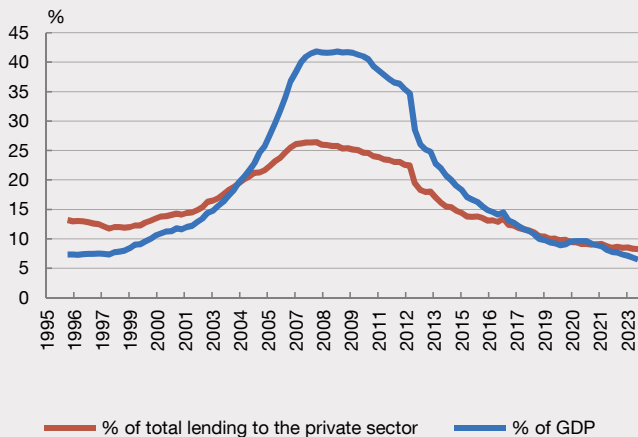


Chart 2
Residual maturity of bank loans to construction and real estate activities firms at Dec-23 (b)

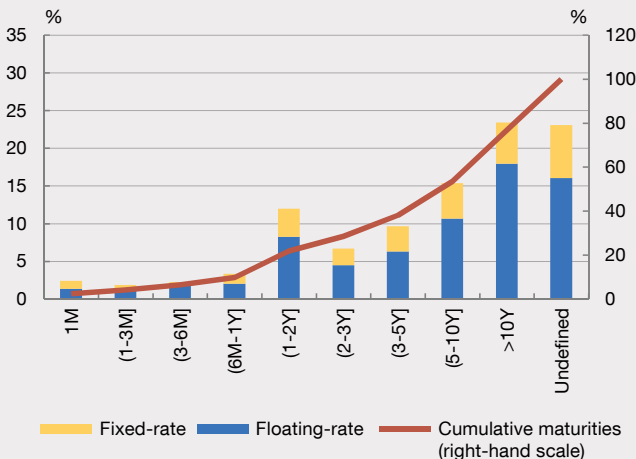


Chart 3
Distribution of the interest coverage ratio (c)

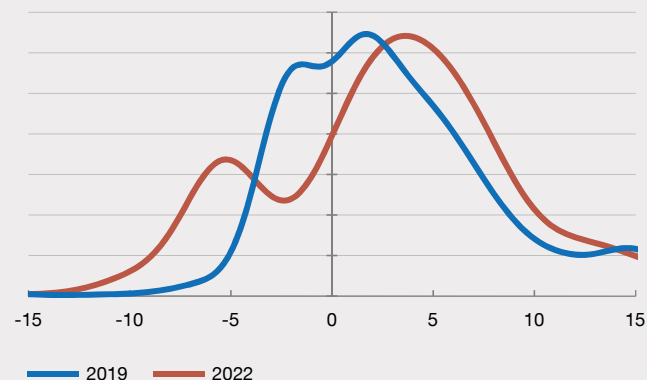
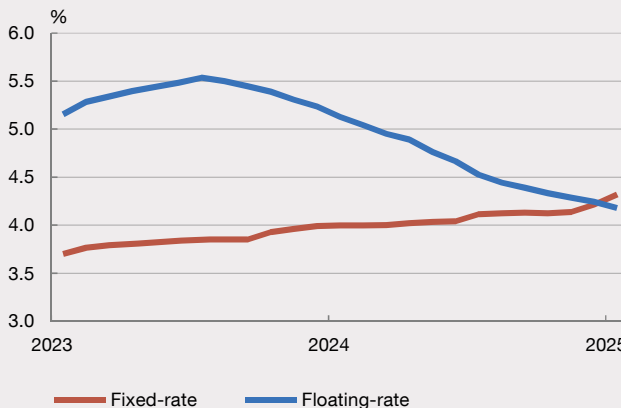


Chart 4
Interest rates on bank lending to real estate activities and construction firms. Projection (baseline scenario) (d)



SOURCES: Banco de España, INE, CCR and CBI.

- a “% of total lending to the private sector” is calculated as the ratio of lending to non-financial corporations engaging in real estate activities and construction to total lending to customers resident in Spain, drawing on information from quarterly individual confidential returns. “% of GDP” uses the same numerator, but the denominator is GDP at market prices, drawing on the INE’s Quarterly National Accounts.
- b The chart depicts the residual maturity of all lending to non-financial corporations engaging in construction and real estate activities (NACE Rev. 2 groups: 411, 412, 681, 682, 683, 431, 421, 422, 429), according to the granular information available in the CCR. Loans where the residual maturity is not reported have been grouped in the category “Undefined”. The simulations in this box only consider loans where the information available in the CCR can be matched to the financial and economic information on the firms’ consolidated financial statements in the CBI. The percentage of operations with a maturity of 2-3 years is higher in the CCR subsample that links to the CBI (10.7%, versus 6.4% in the CCR), and the percentage with a maturity of more than 10 years is somewhat lower (18.9%, versus 20.6% in the CCR).
- c The chart depicts density functions proxied by kernel estimators of the interest coverage ratio of real estate firms, weighted by each firm’s outstanding amount of lending in the corresponding year, according to the information available in December of each year. The distributions consider the same set of firms in the years depicted, to make the distributions more comparable.
- d The chart depicts the average interest rates on bank loans to the real estate firms considered in the simulation, according to the assumptions of the baseline scenario (see the text for more details). This average is weighted by the amount drawn down against each loan at December 2023.

5 The figures refer to firms in the CCR matched to the CBI. For example, around one-third of bank lending to the real estate activities and construction sectors is to firms with a bank debt-to-asset ratio of more than 80%, while one-quarter is to firms with a ratio of less than 20%. More highly leveraged firms tend to have worse interest coverage ratios and a poorer credit standing (higher proportion of loans classified as non-performing or in Stage 2). Further, it should also be borne in mind that some of these firms’ assets could have a very low liquidation value (e.g. housing under construction). Therefore, a low debt-to-asset ratio does not always mean greater debt servicing capacity.

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do so, the observed (up to 2023) and projected future (2024–2025) paths of interest rates (to which the future performance of interest expenses is linked) and economic growth (which is relevant to EBITDA) are considered. In this exercise, it is assumed that the loans maturing over the projection horizon (up to 2025) are renewed for the same amount as at end-2023 and that their original maturities and interest rate reset frequencies are unchanged. In this case, their new interest rate level is recalibrated taking into account the risk premium of loans arranged in 2023.⁶

This exercise assumes firms' assets grow at the same pace as nominal GDP, based on the Banco de España's latest macroeconomic projections.⁷ It also assumes that the EBITDA-to-total assets ratio remains stable (and thus grows at the same rate as GDP)⁸ and that euro area benchmark interest rates decline over the 2023–2025 horizon, in line with market expectations at end-March 2024.⁹

The course of benchmark rates has a significant effect on the interest expenses of the firms analysed. Specifically, the cost of their floating-rate financing declines over the horizon analysed (see Chart 4), whereas that of fixed-rate contracts rises moderately, as a large portion of such financing was granted in a context of lower interest rates and the updated interest rate upon renewal is higher than the original rate. Under this baseline scenario, interest expenses decline in net terms owing to the greater weight of floating-rate contracts in these sectors' bank debt.

In addition, a sensitivity analysis is conducted considering three alternative scenarios for EBITDA and interest rates. The first two scenarios assume market rates are 1 and 2 percentage points (pp) higher than market expectations at end-March 2024, while EBITDA continues to grow at the same pace as GDP. These scenarios effectively assume that the declines in interest rates expected at end-March 2024 do not occur or are far more moderate.

The third alternative scenario considers that interest rates move as envisaged under the baseline scenario, but that firms' EBITDA decreases. The magnitude of the decline is calibrated by first considering the average EBITDA-to-assets ratio in the period 1999–2019. The standard deviation of this time series is then calculated and subtracted from the EBITDA-to-assets ratio observed for each firm, to obtain its stressed EBITDA level (in euro).¹⁰

Chart 5 breaks down the results of this sensitivity analysis by considering various interest coverage ratio intervals. Under the baseline scenario, the interest coverage ratio improves, with the proportion of firms with more comfortable ratios (higher than 2) increasing. In 2023, this improvement is largely attributable to deleveraging by the firms that had worse ratios in 2022. From 2023 onwards, the dynamic of increasing EBITDA and lower interest expenses would ease the debt service burden. No such improvement, however, is observed under the stressed interest rate scenarios. The most adverse path for these sectors' debt service burden is obtained when EBITDA is stressed; under this scenario, the proportion of firms whose interest coverage ratio is below unity or at negative values would increase, and those with a ratio higher than 1 would represent less than 50%.

Lastly, the median ratio of EBITDA less interest expenses to total assets is analysed under the various scenarios. This enables both the excess and the shortfall in interest coverage to be calculated, without leading to definition issues for firms with negative EBITDA. This ratio is calculated separately for firms with different interest expense-to-assets ratios at the 2023 reference date.

As in the foregoing analysis, the most evident deterioration in this ratio occurs when EBITDA contracts. Under this scenario, only firms with lower interest expenses at the outset (below 2% of total assets, accounting for close to 65% of loans to these sectors) are able to generate

6 For this purpose, a distinction is drawn between new fixed and floating-rate loans arranged in 2023, and several groups of loans, classified by original maturity, are also considered. Subsequently, the average risk premium – i.e. the average difference between the interest rate on the loan and the swap reference rate – for each of these groups of loans is calculated. This difference is imputed to the loans whose characteristics match those of these groups and that are renewed over the projection horizon.

7 Banco de España. (2024). "Macroeconomic projections for the Spanish economy (2024–2026)".

8 For firms with negative EBITDA, it is assumed that such EBITDA becomes less negative, and decreases at the same pace as that of nominal GDP growth.

9 Specifically, considering the euro swap yield curve at end-December 2023, and calculating the implied path of short-term swap rates to end-2025. The changes in benchmark interest rates on loans are attributable to changes in this swap rate.

10 The shock to the EBITDA-to-assets ratio is somewhat smaller than that observed at the onset of the 2008 financial crisis. In practice, simultaneous shocks could occur to interest rates and EBITDA. The analysis in this box does not present the possible interactions between the two variables, and instead focuses on characterising the sensitivity of each channel.

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EBITDA in excess of their interest expense. The other groups of firms in the sample either begin to present shortfalls or see existing shortfalls increase (see Chart 6).

While the stressed interest rate scenarios envisage a smaller impact, it is still relatively large for firms that initially had higher interest expense-to-assets ratios (above 3%) in 2023. It should be noted that the financing extended to these firms accounts for a relatively limited proportion (under 20%) of the total loans to the firms in the sample (see Chart 7).

In sum, the volume of bank financing extended to firms engaged in real estate activities and construction is far smaller than that observed before the global financial crisis. However, their financial position presents some heterogeneity. Although a contained number of firms have difficulties in generating sufficient EBITDA to cover

their interest expenses, most firms have comfortable interest coverage ratios.

In addition, it is estimated that, should the path of interest rates exceed market expectations at end-March 2024, about which there is some uncertainty, any deterioration in the sector's bank debt servicing capacity would be limited. However, in the event of such shocks, firms with a larger debt service burden would see a more pronounced worsening of their financial position.

The bank debt burden of the firms in these sectors would be most affected if there were a significant decline in their activity. As no signs of significant imbalances have been detected in the Spanish residential and commercial real estate market in the current environment, in the short term the likelihood of this risk materialising appears to be contained.

Chart 5
Distribution of bank loans by tranche of bank debt interest coverage ratio (a) (b)

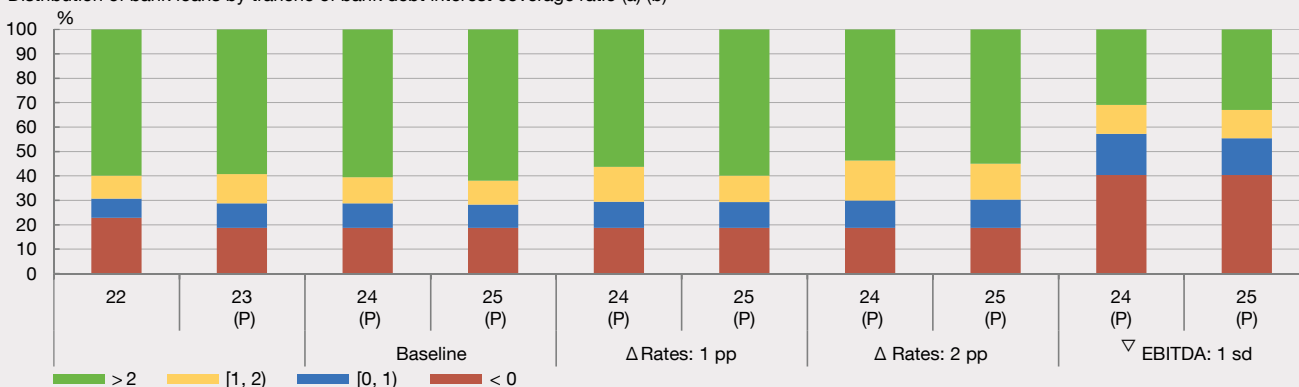


Chart 6
Ratio (EBITDA-Interest expenses on bank debt)/Assets x 100 (b) (c)

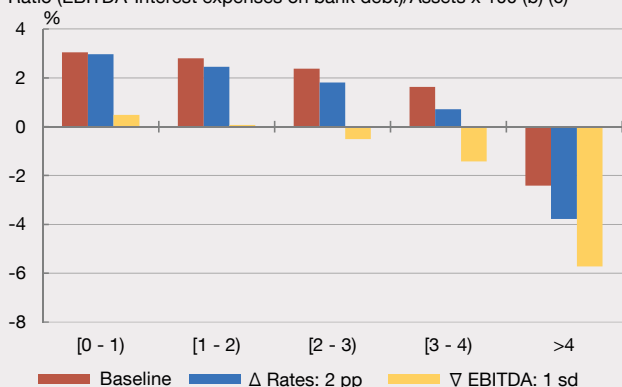
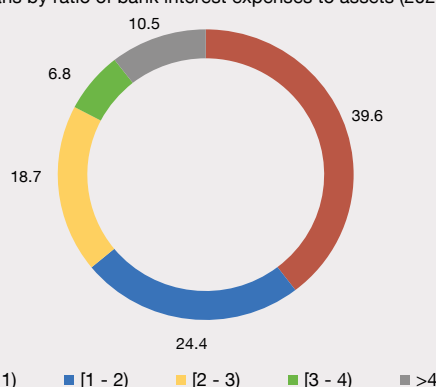


Chart 7
Share of loans by ratio of bank interest expenses to assets (2023, in %)



SOURCES: Banco de España, INE, CCR and CBI.

- a The chart shows the distribution of bank loans to firms with different interest coverage ratios, drawing on CCR and CBI data. The interest coverage ratio for 2022 is an observed value. From 2023 onwards, interest expenses are approximated considering the interest rate on loans in the CCR and future developments. Under the baseline scenario, these future developments coincide with the market expectations at end-March 2024.
- b The scenarios "Δ Rates: 1 pp" and "Δ Rates: 2 pp" assume that market rates are 1 pp and 2 pp, respectively, higher than under the baseline scenario. EBITDA in all cases is estimated assuming that firms' assets grow at the same pace as nominal GDP, with the EBITDA-to-assets ratio remaining stable except in the scenario "∇ EBITDA: 1 sd". This latter scenario assumes a decline in EBITDA equivalent to one standard deviation of the average EBITDA-to-assets ratio observed during the period 1999-2019. The values depicted in the chart reflect the composition of lending in December each year.
- c The chart depicts the median value of the ratio (EBITDA-Interest expenses)/Assets (%) under several scenarios for firms with different interest expense-to-assets ratios (as % of assets, horizontal axis).