

IMPACT OF THE RISING COST OF ENERGY ON SPANISH FIRMS' ECONOMIC AND FINANCIAL POSITION

In recent months energy prices have continued to increase, largely as a consequence of the outbreak of war in Ukraine, prolonging the upward trend observed during 2021. This has been accompanied by a notable increase in the volatility of such prices, reflecting uncertainty about future energy price developments, largely stemming from doubts as to the duration of the war and its possible escalation. As a result, the implicit average energy prices in the baseline scenario have been revised up in the latest Banco de España macroeconomic projections, published in April.¹ Specifically, it is assumed that their average level for 2022 and 2023 will be 22% and 25% higher, respectively, than in the December 2021 macroeconomic projections.

This box analyses the impact of this increase in energy prices on Spanish firms' economic and financial position. This is done based on individual firms' position in 2020, drawing on the information in the Central Balance Sheet Data Office integrated database, and on a simulation for the following two years consistent with the macroeconomic projections published by the Banco de España in December 2021, which make up the counterfactual baseline scenario. The energy price shock has been applied to this scenario at the sectoral level. Thus, the changes in firms' purchases and sales due to the increase in energy prices are assumed to be the same for all of the firms in each of the 44 sectors considered. Such changes have been taken from the results of a general equilibrium sectoral model.² These exercises make it possible to evaluate, first, the impact of the shock on the part of the margin included in gross value added (GVA) in nominal terms (the difference between sales revenue and the costs associated with purchases of materials and energy consumption). This exercise considers both the direct effect of the increase in energy costs and its indirect effect on the rest of the inputs associated with the production chains. GVA per unit of output is assumed to remain constant for the average of each sector.³ At the

individual level, the impact on GVA captures both price and quantity effects, since demand is assumed to contract as a result of higher sale prices.

Chart 1 shows the impact on firms' nominal GVA in 2023 and compares it with a counterfactual scenario where energy prices follow the path projected in December 2021. The chart shows the changes in each sector's GVA in relative terms, in relation to pre-shock sales. It can be seen, first, that practically all sectors would be negatively affected by this shock, albeit moderately. Fishing and aquaculture would see the largest fall in GVA, with a cumulative decline over these two years equivalent to 1.6% of turnover. Some of the sectors hardest hit by the COVID-19 crisis (marked in red), such as maritime transport and air transport, are also among those most affected by this shock. Lastly, the chart also shows that one sector (extraction of crude petroleum and natural gas) would benefit from the increase in energy prices.

The expected changes in two indicators that approximate the impact of rising energy prices on firms' financial vulnerability are analysed below. These indicators measure, respectively, the increase in the share of firms with negative profitability and of highly indebted firms in the corporate sector's gross debt.⁴ It has also been assumed that rising energy prices will lead to a slight rise in wages, in line with the results of a macroeconomic model.⁵ The results of these exercises are summarised in Charts 2 and 3. Based on the simulations conducted, financial vulnerability is expected to rise relatively moderately as a result of the shock: by just over 3 percentage points (pp) in the case of firms with negative profitability and by more than 2 pp in that of highly indebted companies, in each of the two years analysed (2022 and 2023). This increase is substantially smaller than the one seen in 2020 as a result of the COVID-19 crisis (over 10 pp in both cases). Financial vulnerability is

1 See the Banco de España's April 2022 "Macroeconomic projections for the Spanish Economy (2022-2024)".

2 This is a general equilibrium sectoral production model of an open economy that captures the interactions across sectors (divided into 44 categories) and countries. The calibration of the model also takes into account firms' ability to substitute different inputs and factors of production, which is relatively limited in the case of energy. The trade flows between sectors and countries that are needed to calibrate each sector's production requirements and the input-output relationships are estimated using the 2018 ICIO tables. These tables have information on purchases and sales between 44 sectors for the 65 countries in the sample (plus a "rest of the world" category), and on their sales to final consumers. The parameters for the elasticities of substitution between the different sectors are taken from estimates in the scientific literature. For more information, see J. Quintana (2022), "Consecuencias económicas del cierre comercial entre Rusia y la Unión Europea", *Artículo Analítico*, Banco de España (forthcoming).

3 In other words, it is assumed that, on average in each sector, firms pass on their higher input costs to their customers.

4 Firms are understood to be highly indebted where their ratio of net financial debt / (gross operating profit + financial revenue) is higher than 10 or if they have positive net financial debt and zero or negative earnings.

5 Specifically, the Quarterly Macroeconometric Model of the Banco de España (MTBE) has been used.

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therefore expected to continue falling in 2022 and 2023, prolonging the trend that started in 2021, albeit at a slower pace than had been anticipated in the December 2021 projections.

The last two charts contain a breakdown of the sectors whose financial vulnerability is expected to deteriorate most due to rising energy prices, based on the two indicators analysed. The shock has notably disparate effects. Thus, while the impact on firms overall stands at just over 2 pp, it is expected to top 5 pp in the three most affected sectors. As expected, the sectors whose financial vulnerability is expected to rise most include some whose margins would be hardest hit, such as wholesale and retail trade and repair of motor vehicles, land transport, fishing and agriculture. Nonetheless, the degree of financial vulnerability is also expected to rise by more than the average in some sectors in which the impact on sectoral margins is comparatively small, such as metallurgy, in the first indicator, or publishing, cinema,

television and radio, in the second. This is largely because before the shock, some of the firms in such sectors were already hovering around the thresholds determining vulnerable status.

In any event, it should be borne in mind that these simulations do not capture other significant adverse effects of the war in Ukraine, and can therefore be deemed to represent a lower bound for the impact of this event on the financial position of firms. Notable examples of these additional effects include, first and foremost, those relating to falling economic confidence and to the trade channel (drop in exports). In addition to the effect on production chains of the shocks analysed in this box, the rising price of energy may also affect margins if it leads to a larger fall in demand than that considered here. Indeed, it has already been observed that inflation is eating into households' gross disposable income, while undermining consumer confidence. Lastly, the financial position of firms may also be adversely affected by a

Chart 1
 IMPACT OF A CUMULATIVE 25% RISE IN ENERGY PRICES ON VALUE ADDED IN 2023
 With respect to the sales under the counterfactual scenario



SOURCE: Banco de España.

a The sectors severely affected by COVID-19 are defined as those whose sales in 2020 fell by more than 15%.

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potential increase in financing costs, should monetary policy be tightened in response to rising inflation. These additional factors fall outside the scope of this box (which aims to

identify the most direct channel through which energy prices affect firms' financial positions) and are included in the macro-financial risk scenarios described in Box 1.3

Chart 2
SHARE OF FIRMS WITH NEGATIVE PROFITABILITY IN TOTAL GROSS DEBT (a)

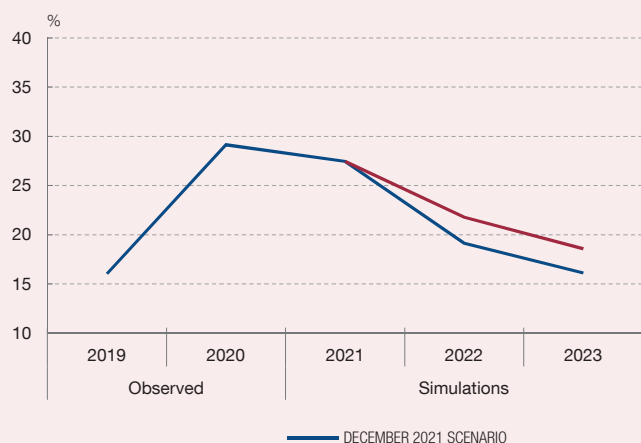


Chart 3
SHARE OF FIRMS WITH HIGH DEBT LEVELS IN TOTAL GROSS DEBT (c)

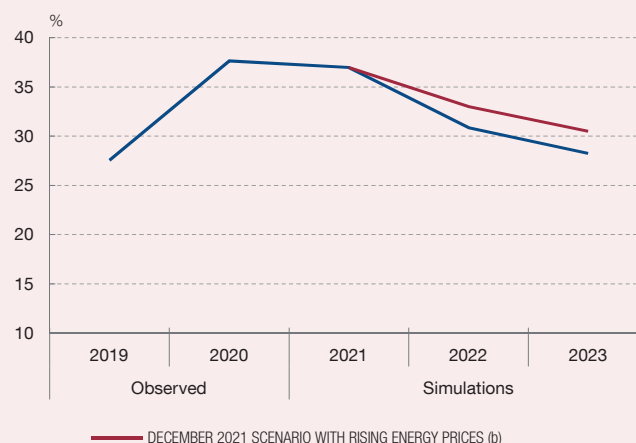


Chart 4
FIRMS WITH NEGATIVE PROFITABILITY IN 2023. CHANGE IN THEIR SHARE IN THE TOTAL GROSS DEBT DUE TO RISING ENERGY PRICES. SECTORS WITH THE LARGEST INCREASE (a) (b)

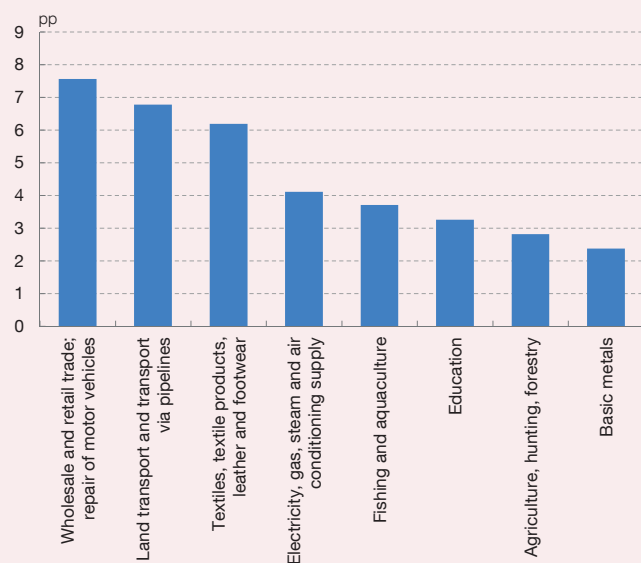
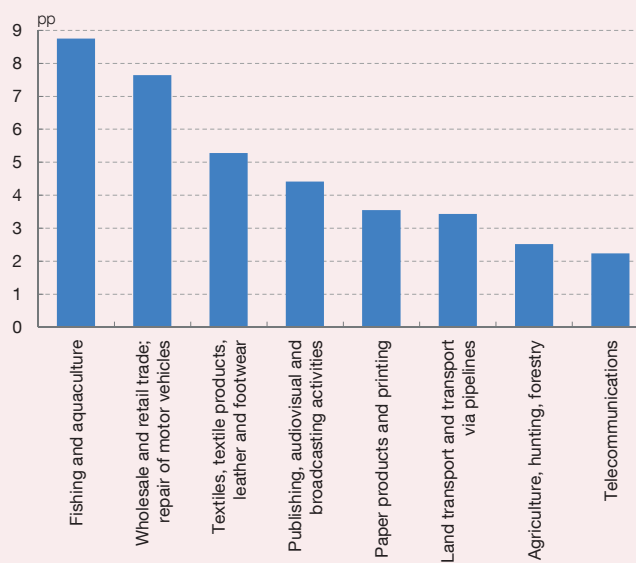


Chart 5
HIGHLY INDEBTED FIRMS IN 2023. CHANGE IN THEIR SHARE IN THE TOTAL GROSS DEBT DUE TO RISING ENERGY PRICES. SECTORS WITH THE LARGEST INCREASE (b) (c)



SOURCE: Banco de España.

- a Profitability is defined as (ordinary net profit + financial costs) / assets net of non-interest-bearing borrowing.
- b A 22% rise in energy prices has been assumed for 2022, with an additional 3% in 2023.
- c Highly indebted firms are defined as those whose net financial debt / (gross operating profit + financial revenue) ratio is greater than 10 or which have positive net financial debt and zero or negative earnings. Net financial debt is defined as interest-bearing borrowing minus liquid assets and short-term financial investments.