

### **Box 3**

#### **Do corporate fundamentals explain differences in sectoral NPLs?**

---

Prepared by Sándor Gardó, Maciej Grodzicki, Benjamin Klaus and Julian Metzler

**Weak corporate asset quality is a concern from a financial stability perspective.** Distressed corporate debt has been the centrepiece of the high stock of non-performing loans (NPLs) of euro area banks. NPL stocks are a symptom of balance sheet difficulties faced by a large proportion of firms, which in turn may depress investment and employment, deprive banks of profitable lending opportunities, and therefore weigh on economic growth and the health of the banking sector itself.

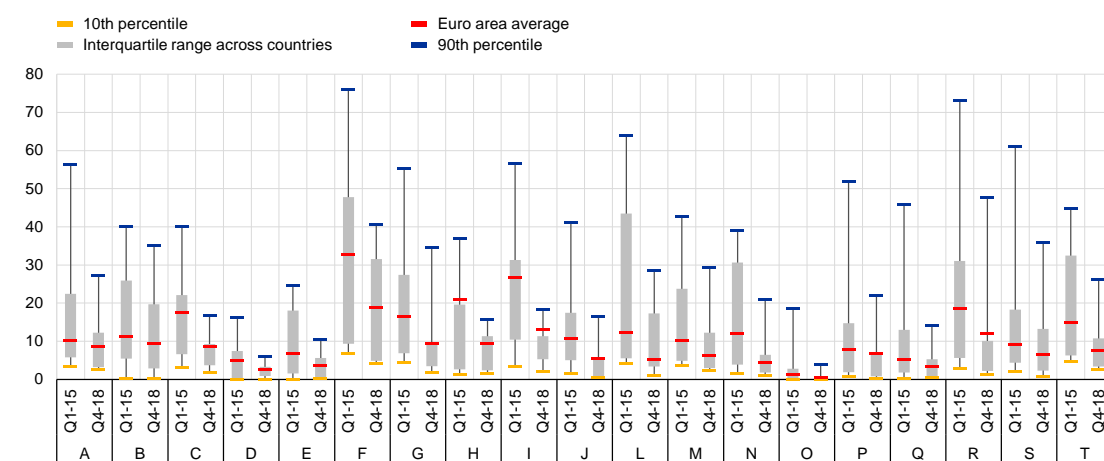
**This box attempts to identify the fundamental drivers of corporate asset quality.** The corporate finance literature has long studied predictors of distress of individual firms. Findings indicate that accounting ratios, capturing firms' leverage, liquidity, profitability, solvency and type of economic activity, can provide early warning signals of corporate failure.<sup>14</sup> On the other hand, concerning the drivers of aggregate NPL movements, the literature has tended to focus on macroeconomic and financial variables.<sup>15</sup> This analysis combines these two approaches using novel quarterly data on corporate NPL stocks held by euro area significant institutions, broken down in accordance with the NACE industry classification. These data are combined with data from the national accounts, which provide a breakdown of gross value added and corporate profit margins along the industry dimension. As the data cover the period of a continuous decline in euro area NPL stocks between 2015 and 2018, the analysis is extended with less granular NPL data series published by the IMF which start in 2008.

## Chart A

NPL ratios decreased in the euro area, but are widely dispersed across countries and sectors

### NPL ratios by sector of non-financial economic activity and their distribution across euro area countries

(Q1 2015, Q4 2018, percentages)



Sources: ECB and ECB calculations.

Notes: **A** – Agriculture, forestry and fishing, **B** – Mining and quarrying, **C** – Manufacturing, **D** – Electricity, gas, steam and air conditioning supply, **E** – Water supply, **F** – Construction, **G** – Wholesale and retail trade, **H** – Transport and storage, **I** – Accommodation and food service activities, **J** – Information and communication, **L** – Real estate activities, **M** – Professional, scientific and technical activities, **N** – Administrative and support service activities, **O** – Public administration and defence, compulsory social security, **P** – Education, **Q** – Human health services and social work activities, **R** – Arts, entertainment and recreation, **S** – Other services, **T** – Total loans.

**Asset quality varies substantially across sectors of economic activity.** Nearly 15% of euro area corporate and SME loans were non-performing in the first quarter of 2015. The subsequent economic expansion, alongside the increased scrutiny by supervisors and regulators, contributed to the decline in this ratio to about 8% by the end of the final quarter of 2018. The quality of corporate loans varies across countries and economic sectors (see **Chart A**). On aggregate, the highest NPL ratios were found in the construction, accommodation and food services as well as transport industries, while loans to public utilities and health service companies became distressed the least frequently. Manufacturing and trade sectors also exhibited above-average NPL ratios.

<sup>14</sup> Altman, E. I., "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy", *Journal of Finance*, Vol. 23, No 4, September 1968, pp. 589-609.

<sup>15</sup> See, for example, Beck, R., Jakubik, P. and Piloju, A., "Non-performing loans: What matters in addition to the economic cycle", *Working Paper Series*, No 1515, ECB, February 2013.

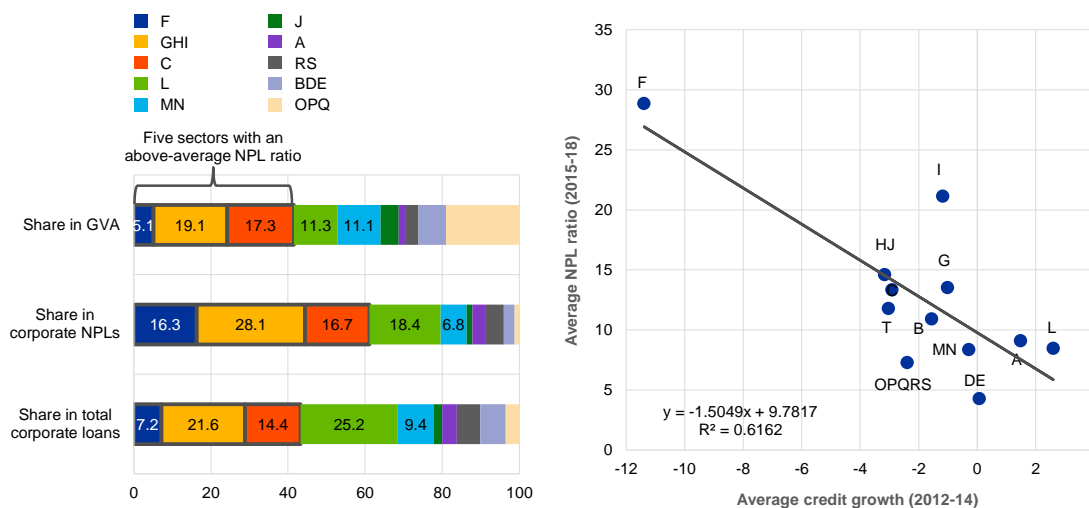
**Corporate NPLs appear to be concentrated within a few sectors of economic activity.** In the euro area, the five sectors afflicted by acute asset quality problems account for 41% of the corporate loan stock and 43% of total gross value added (see **Chart B**, left panel). Banks appear to have reduced credit to the sectors that were subsequently among the most affected by weak asset quality (see **Chart B**, right panel). On the one hand, this may suggest that solvency problems were detected and banks reduced lending as there were fewer solvent borrowers, but, on the other hand, it could also have amplified corporate financial distress.

### Chart B

Five sectors in which NPL ratios are above average account for a large part of euro area gross value added and bank loans to non-financial corporations

**Breakdown of corporate loans, gross value added and NPLs by NACE category (left panel); average NPL ratios and average credit growth across sectors of economic activity in the euro area (right panel)**

(left panel: percentages; right panel: credit growth, annual percentage changes; NPL ratio, percentages)



Sources: Eurostat, ECB and ECB calculations.

Notes: Left panel: GVA – gross value added. Sectors ordered by decreasing NPL ratio. Aggregation of sectors BDE, GHI, MN, OPQ and RS is necessary owing to unavailability of sufficiently granular data on gross value added. Both panels: for the industry labelling, see the notes to Chart A.

**On aggregate, corporate financial health deteriorates about three years ahead of the observed weakening of banks' asset quality.** In a panel model covering twelve euro area countries, which spans a longer time period but does not capture information on the sectors of economic activity, corporate profit margins worsen about 13 quarters ahead of the increase in NPL ratios. Moreover, the effect of margin contraction on NPLs is amplified by high corporate indebtedness: in national corporate sectors characterised by increasing debt-to-income ratios, NPLs respond more strongly to deteriorating margins (see **Chart C**, left panel).

**Industry data reveal marked differences in both the strength and duration of the pass-through from corporate financial health to NPLs.** Changes in gross value added and employment provide advance information about prospective changes in NPL ratios at the industry level. The lead time varies across industries, possibly reflecting different sensitivity to the business cycle and different balance sheet structure. As the economic expansion in the euro area took hold after 2012, asset quality improved the fastest in real estate activities. The two sectors where the NPL ratios were the highest also had the longest lag between the improving fundamentals and NPL reductions (see **Chart C**, right panel). These results should, however, be interpreted with caution, as they are based

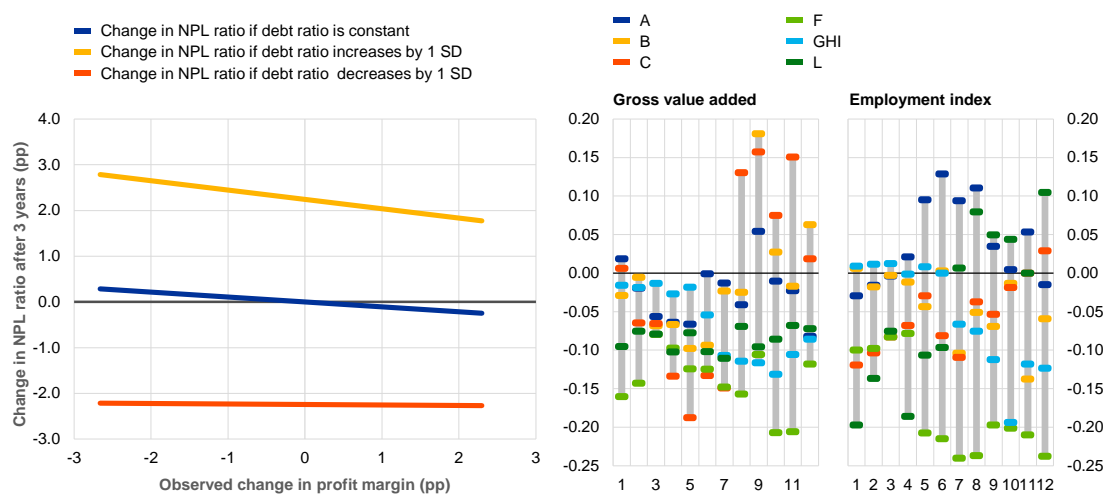
on a period of pronounced reduction in NPLs, in part related also to NPL disposals to non-bank investors.

### Chart C

NPL ratios increase with a considerable lag after a deterioration in corporate indebtedness, profitability and employment

Response of NPL ratio to changes in profit margins conditional on changes in gross debt-to-income ratio (left panel) as well as correlation between NPL ratio change and change in gross value added and employment index per industry (right panel)

(left panel: percentage points; right panel: y-axis: correlation coefficient, 2015-18; x-axis: lag length in quarters; bars: min-max range)



Sources: Eurostat, ECB and ECB calculations.

Notes: Left panel: SD – standard deviation. Right panel: the employment index is for the yearly growth rate in total and sector-specific industry employment, as evaluated by the EU Labour Force Survey. Gross value added is a yearly growth rate in total and sector-specific output value less intermediate consumption. Due to data unavailability for other NACE sectors, results are only presented for six sectors.

**Looking ahead, NPL ratios may continue to improve in the near term, before the impact of the current economic slowdown becomes evident in bank asset quality and provisioning needs.**

The emergence of such an impact can be preceded by weakening corporate profit margins, increasing indebtedness and rising redundancies. These indicators, of which only the first has so far showed signs of deterioration, have quite a long lead time, as it takes time for deteriorating fundamentals to hamper companies' ability to service their debt and ultimately result in higher NPL ratios. Moreover, banks may have used extensive forbearance in the past to defer the recognition of NPLs. The entry into force of the harmonised NPL definition in 2014 and the more forward-looking accounting rules in 2018 may lead to a gradual reduction of this lag.