

PIRAEUS BANK



# Estimating the Impact of the COVID-19 Recession on Greek Corporate Balance Sheets: Results from a Highly Stylized Model

Ilias Lekkos  
Paraskevi Vlachou

[Lekkosi@piraeusbank.gr](mailto:Lekkosi@piraeusbank.gr)  
[Vlachoupar@piraeusbank.gr](mailto:Vlachoupar@piraeusbank.gr)

**Economic Research & Investment Strategy**

August 2020



**1** Research motivation | Key Findings

**2** Methodological Framework

**3** Estimating the Balance Sheet Impact

**4** Assessing Corporate Distress

**5** Stress-testing our Enterprise Rating System (ERS)

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- ✓ It is a grave understatement to say that the current pandemic-induced crisis is affecting the Greek economy at the worst possible moment, just as it was beginning to recover from a decade-long recession. This is especially true of the Greek corporate universe, which, after having suffered a period of indiscriminant contraction, was in the middle of a process of substantial restructuring with healthy, well managed firms gaining ground and weak, less productive firms sinking into losses and insolvency. This restructuring process was documented in the last annual update of our Greek Corporate Enterprise Rating System\*, where we presented evidence of a measured increase in the ranks of “a”-rated outperformers as well as a more visible trend of downgrades from “c”-rated medium performers to “d”-rated underperformers.
- ✓ However, things are what they are. Despite the highly elevated levels of uncertainty, we must at least attempt to analyse the impact of the unfolding recession on Greek corporate balance sheets and strive to answer a number of relevant questions, such as:
  - What mechanism allows the transmission of a macroshock to the microeconomic situation of each corporation?
  - How can we quantify the shock to firms’ balance sheets, and what is the sectoral breakdown?
  - What percentage of firms will be distressed, and what is the extent of this financial distress?
  - How will the rating distribution of Greek corporations be affected, and what will the rating migration matrices look like?

# Adjustment of the 2019 Enterprise Rating System Results Regarding the Impact of the COVID-19 Pandemic

- ✓ To answer these questions, we build on the research of the European Commission and the OECD,<sup>\*</sup> as well as our previous research on the Greek Enterprise Rating System (ERS) that we have developed over the years.
- ✓ The starting point of our thinking is that the recession will cause companies' turnover (or sales) to decline, which will be a reflection of the economy-wide decline in demand. As a defence mechanism, companies will attempt to adjust their cost base, but this adjustment will fall short of the decline in revenues. It is this asymmetric nature of income and cost adjustment that leads to losses, liquidity shortage and equity depletion.
- ✓ This “real economy process” is distilled into a highly stylized system of equations, which, despite their rudimentary nature, allow us to extract a number of interesting conclusions about the size of the turnover decline, the impact of EBITDA, the size of the liquidity shortage, its sectoral decomposition, and the amount of equity depletion.
- ✓ Finally, feeding our post-COVID “stress”–simulated corporate accounts into our ERS rating system, we can produce concrete evidence of the downward shift in the distribution of Greek corporate ratings as well as the unfavourable transitions to lower rating classes for most Greek corporations.

<sup>\*</sup> EC Working Document, *Identifying Europe's recovery needs*, May 2020; OECD, *Corporate sector vulnerabilities during the Covid-19 outbreak: Assessment and policy responses*, May 2020



## Key Findings I: Impact on Greek Corporations' Balance Sheets...

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- ✓ Based on our microsimulations, we estimate a drastic deterioration of corporate performance due to the pandemic.
- ✓ Based on our assumptions, the turnover adjustment is estimated at €21bn or 19% of pre-COVID-19 sales.
- ✓ The EBITDA adjustment is estimated at €12bn.
  - The trade sector shifts massively into losses due to the lockdown impact and its significant size.



## Key Findings I: ...Continued



- ✓ The cash adjustment is estimated at €239mn.
  - Although the accommodation and food services sector makes up a small share of our sample (9.6%), it is second in terms of total cash depletion, following trade.
- ✓ The equity adjustment is estimated at €9bn.
  - 73% of equity erosion is recorded in just three sectors: trade, manufacturing and accommodation and food services.
- ✓ The liability adjustment is estimated at €4bn.
  - The arts etc. sector, accounting for only 0.6% of the sample, is second in increased liabilities—even higher than manufacturing.
- ✓ We estimate a shift of 2020 earnings and income to levels lower than those pre-COVID-19, which will lead to equity erosion, cash shortage and additional liabilities.
- ✓ The negative estimated impact of the pandemic in financial statements reflects the lower performance of examined liquidity, profitability and solvency ratios.



## Key Findings II: Assessing Distress

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- ✓ We estimate that 78% of firms will be distressed and loss-making, with aggregated losses of around €8bn.
  - More than half of the estimated losses will come from the trade sector.
  - Of the 10,269 firms, 40.7% and 32.6% will record losses larger than their cash and working capital buffers, respectively.
- ✓ The estimated cash shortfall of the 40.7% of firms that will record losses larger than their cash buffers amounts to €4.1bn.
  - The trade, manufacturing and accommodation and food services sectors contain the most vulnerable firms and need to obtain credit support to cover cash shortfall.
- ✓ The estimated working capital shortfall of the 32.6% of firms that will record losses larger than their working capital buffers amounts to €4.8bn.
  - The arts etc. sector makes up only 0.4% of vulnerable firms, but its liquidity pressure is the third-highest, after trade and manufacturing.



## Key Findings III: Stress-testing our Enterprise Rating System...



- ✓ Based on our internal rating system, we estimate a drastic deterioration of corporate performance due to the pandemic.
- ✓ According to our quantitative rating system, the structure of Greek entrepreneurship is estimated to change the shape of its entire distribution.
  - We estimate a 31.7% increase in underperformers (“d”).
- ✓ The most unfavourable rating transitions are:
  - Pre-COVID-19 medium performers (“c”) to underperformers (“d”) (60.2%).
  - Pre-COVID-19 good performers (“b”) to medium performers (“c”) (52.8%).
  - Even the outperformers (“a”) lose ground.
- ✓ In 2020, corporate liquidity performances are estimated to drop to even lower than in the pre-COVID-19 era.
  - The most populous pre-COVID-19 “d”-rating class (32% of the total sample) is estimated to increase even more (to 40%), drawing mostly from “c”-rated companies.
  - Firms with “a”-rated liquidity appear resilient.





- ✓ Profitability seems fragile for all ratings.
  - Post-COVID-19, “d”-rated firms make up almost 77.4% of the sample.
  - Few enterprises will maintain satisfactory profitability levels in 2020.
- ✓ We estimate an increased risk for more enterprises with critical solvency problems.
  - An additional 33% of enterprises are estimated to encounter serious solvency problems and receive “d” ratings in terms of solvency in 2020.
  - The most unfavourable rating transitions are:
    - Pre-COVID-19 firms rated “c” to “d” (63.7%).
    - Pre-COVID-19 firms rated “a” to “c” (48%).





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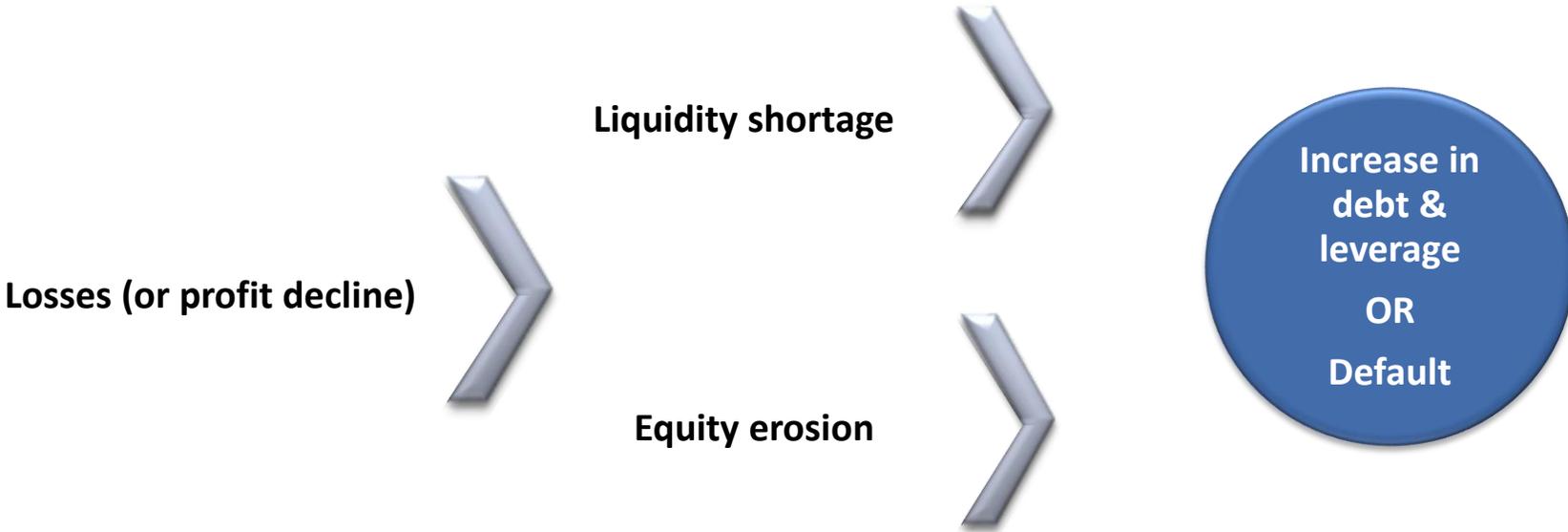
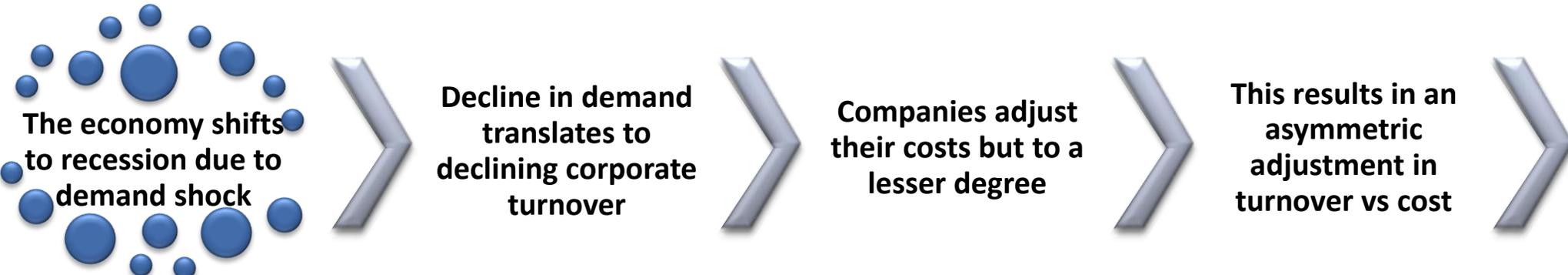




- ✓ The methodology developed in this study allows us to translate a macroeconomic shock (due to COVID-19-related social distancing measures) to an estimate regarding the decline in turnover (or sales) for each of the major sectors of the Greek economy.
- ✓ Taking the declined revenues as a given, we then assume that companies also adjust their cost base by a fraction of the percent of decline in turnover.
- ✓ The combination of these two hypotheses allows us to model the impact of the COVID-related recession on companies' entire balance sheets, in the sense that the asymmetric nature of their income and cost adjustment leads to losses, which affect the liquidity and capital position of each company.
- ✓ Faced with a liquidity shortfall and despite equity depletion, companies need credit support from the banking sector. Those unable to increase their leverage will face default.



# How Is the Macroeconomic Demand Shock Transmitted to Corporate Balance Sheets?





- ✓ Let  $S_{si,t}$  denote the sales (turnover) of firm  $i$  that belongs to sector  $s$ , at year  $t$ .
- ✓ Also let  $d_s$  denote the percentage of decline\* in turnover in that sector. Then:

$$\text{Revenue Adjustment}_{i,t} = (1 - d_s) \times S_{si,t-1}$$

- ✓ The estimates of  $d_s$  for all major sectors of the Greek economy are provided in Appendix II. So, if we expect that a sector will see a 30% reduction in sales as a result of COVID-19, the revenue adjustment of all companies in that sector will be equal to  $(1 - 30\%) \times \text{sales}_{\text{pre-COVID}}$  or 70% of  $\text{sales}_{\text{pre-COVID}}$ .

\* However, we assume a turnover increase for some sectors, such as of supermarkets.





- ✓ To approximate the actual business decision process as closely as possible, it is realistic to assume that the corporations faced with this unprecedented shock, will try to contain their operating cost base,  $C_{si,t}$ .
- ✓ We assume (following the EC Working Document, *Identifying Europe's recovery needs*, May 2020) that this cost adjustment will be proportional to the expected decline in turnover. We call this **cost elasticity** and express it as a percentage of the demand shock.
- ✓ Due to lack of evidence and information we adopt EC assumption for a cost elasticity of 50%. Therefore,

$$\text{Cost Adjustment}_{i,t} = (1 - x\% \times d_s) \times C_{si,t-1}, \text{ with } x = 50\%$$





- ✓ The level of profit or loss for each firm  $i$  is estimated as:

*Profit/Loss Adjustment* $_{i,t}$

$$= \text{Revenue Adjustment}_{i,t} - \text{Cost Adjustment}_{i,t} - (\text{Interest Expenses}_{i,t} + \text{Taxes}_{i,t} + \text{Other}_{i,t})$$





- ✓ Under the assumption that firms are able to deplete their cash or working capital accounts, we estimate the liquidity impact of COVID-19 related losses based on their impact on the companies' pre-COVID cash balances or on their pre-COVID working capital levels. Either way:

$$\text{Liquidity (Cash or Working Capital) Adjustment}_{i,t} = \max[\text{Cash (or Working Capital)}_{i,t-i} + \text{Profit/Loss Adjustment (excl. depreciation and amortisation)}_{i,t}, 0]$$

$$\text{Liquidity (Cash or Working Capital) Shortfall}_{i,t} = \text{Loss Adjustment (excl. depreciation and amortisation)}_{i,t} > \text{Liquidity}_{i,t-1}$$

where

$$\text{Working capital} = \text{current assets} - \text{current liabilities}$$





- ✓ We assume that the amount of losses that companies are not able to cover with their cash and cash equivalent buffer – in other words, their cash shortfall – is added to their liabilities. Further, we assume that 50% of that amount is recognized as a current liability. Thus,

$$Liabilities_{i,t} = Liabilities_{i,t-1} + Cash\ Shortfall_{i,t}$$

$$Current\ Liabilities_{i,t} = Current\ Liabilities_{i,t-1} + 50\% \times Cash\ Shortfall_{i,t}$$





- ✓ Assuming no profit distribution to shareholders/owners and no new equity injections, the equity adjustment follows the same pattern as the liquidity adjustment:

$$Equity\ Adjustment_{i,t} = Equity_{i,t-i} + Profit/Loss\ Adjustment_{i,t}$$



## Final Framework

- ✓ All of these so-called adjustments introduced above form a system of equations that allows us to demonstrate how a macroeconomic demand shock reverberates across the Greek corporate balance sheet:

$$\text{Revenue Adjustment}_{i,t} = (1 - d_s) \times S_{si,t-1}$$

$$\text{Cost Adjustment}_{i,t} = (1 - x\% \times d_s) \times C_{si,t-1}, \text{ with } x = 50\%$$

$$\begin{aligned} \text{Profit/Loss Adjustment}_{i,t} \\ = \text{Revenue Adjustment}_{i,t} - \text{Cost Adjustment}_{i,t} - (\text{Interest Expenses}_{i,t} + \text{Taxes}_{i,t} + \text{Other}_{i,t}) \end{aligned}$$

$$\text{Equity Adjustment}_{i,t} = \text{Equity}_{i,t-i} + \text{Profit/Loss Adjustment}_{i,t}$$

$$\begin{aligned} \text{Liquidity (Cash or Working Capital) Adjustment}_{i,t} = \\ \max[\text{Cash (or Working Capital)}_{i,t-i} + \text{Profit/Loss Adjustment (excl. depreciation and amortisation)}_{i,t}, 0] \end{aligned}$$

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$$\text{Liabilities}_{i,t} = \text{Liabilities}_{i,t-1} + \text{Cash Shortfall}_{i,t}$$

$$\text{Current Liabilities}_{i,t} = \text{Current Liabilities}_{i,t-1} + 50\% \times \text{Cash Shortfall}_{i,t}$$





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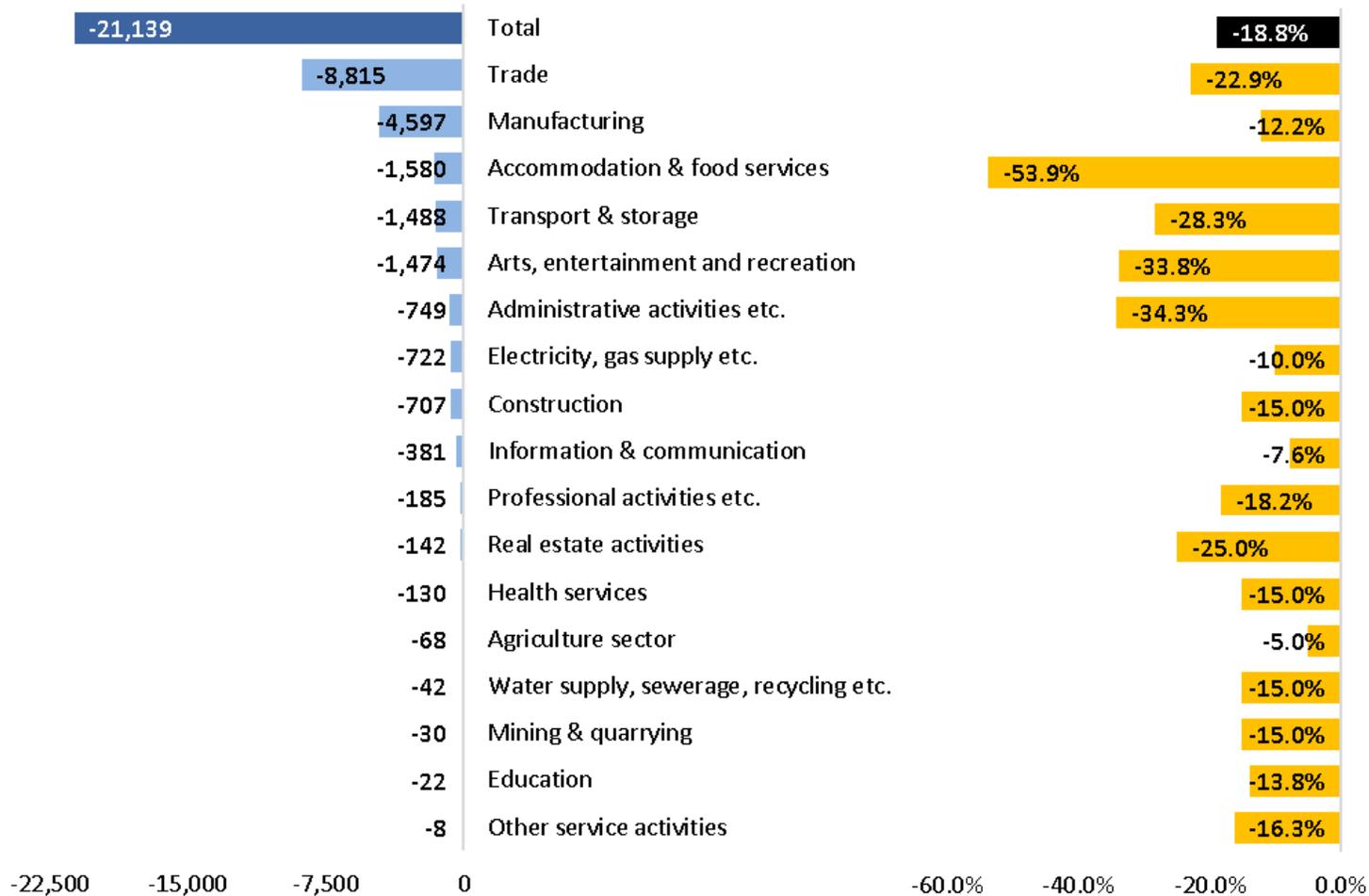


The impact of our methodology on the b/s of 10,269 Greek corporations is as follows:

**Turnover Adjustment** is estimated at €21bn, or 19% of pre-COVID-19 sales.

€-21.1B turnover decline due to COVID-19 (figures in €mn)

% Turnover decline due to COVID-19



✓ Turnover decline is based on our demand shock scenarios on sales under the assumption of controlled epidemiological conditions.

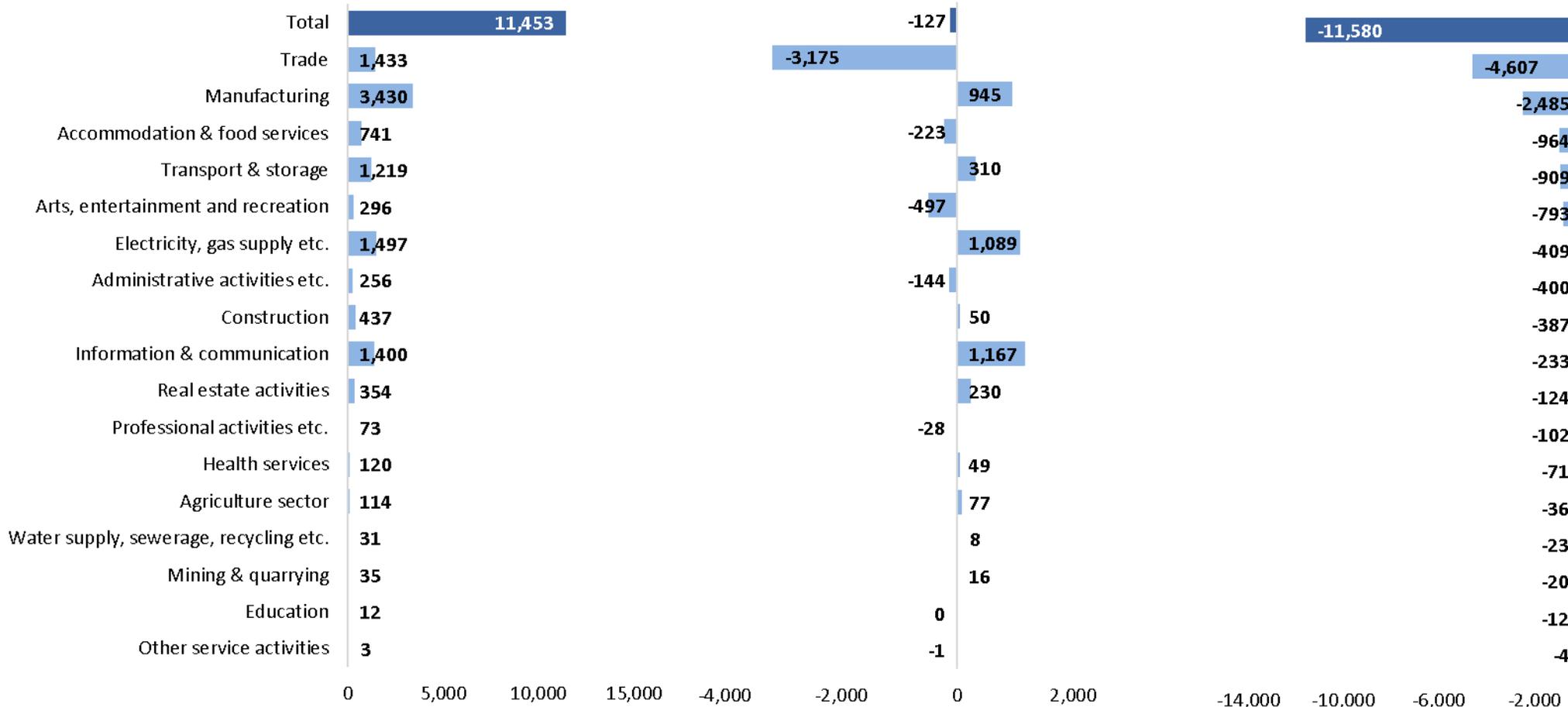
## EBITDA Adjustment is estimated at €12bn.

- ✓ The trade sector shifts massively into losses due to the lockdown impact and its significant size.

EBITDA before COVID-19 (figures in €mn)

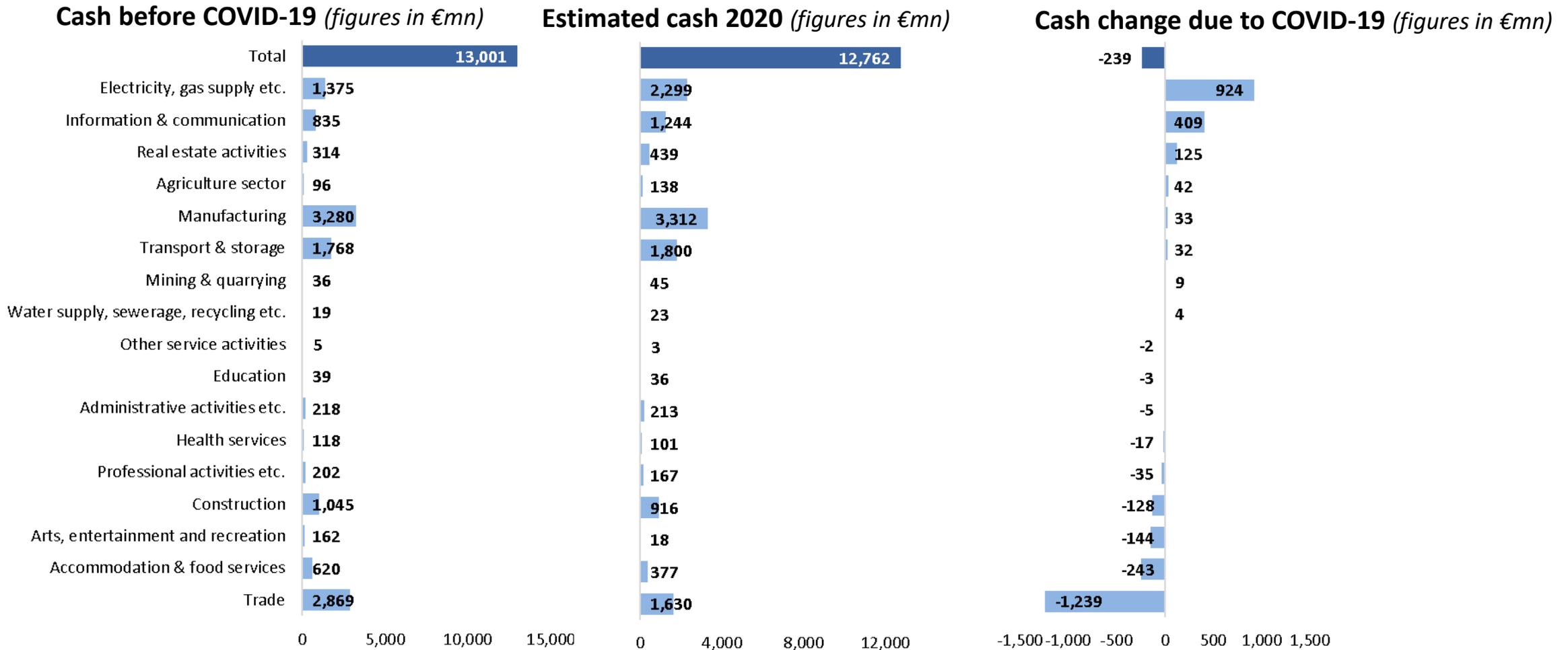
Estimated EBITDA 2020 (figures in €mn)

EBITDA change due to COVID-19 (figures in €mn)



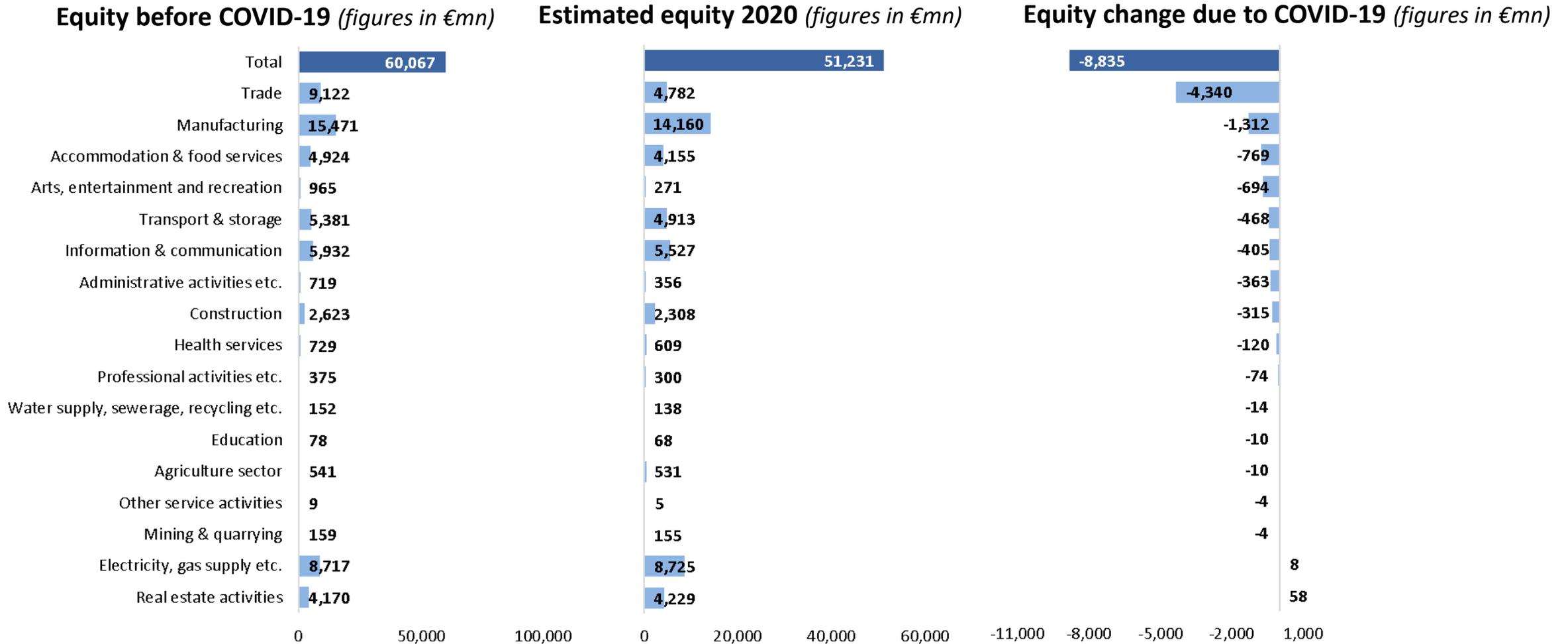
## Cash Adjustment is estimated at €239mn.

- ✓ Although the accommodation and food services sector makes up a small share of our sample (9.6%), it is second in terms of total cash depletion, following trade.



## Equity Adjustment is estimated at €9bn.

- ✓ 73% of equity erosion is recorded in just three sectors: trade, manufacturing and accommodation and food services.



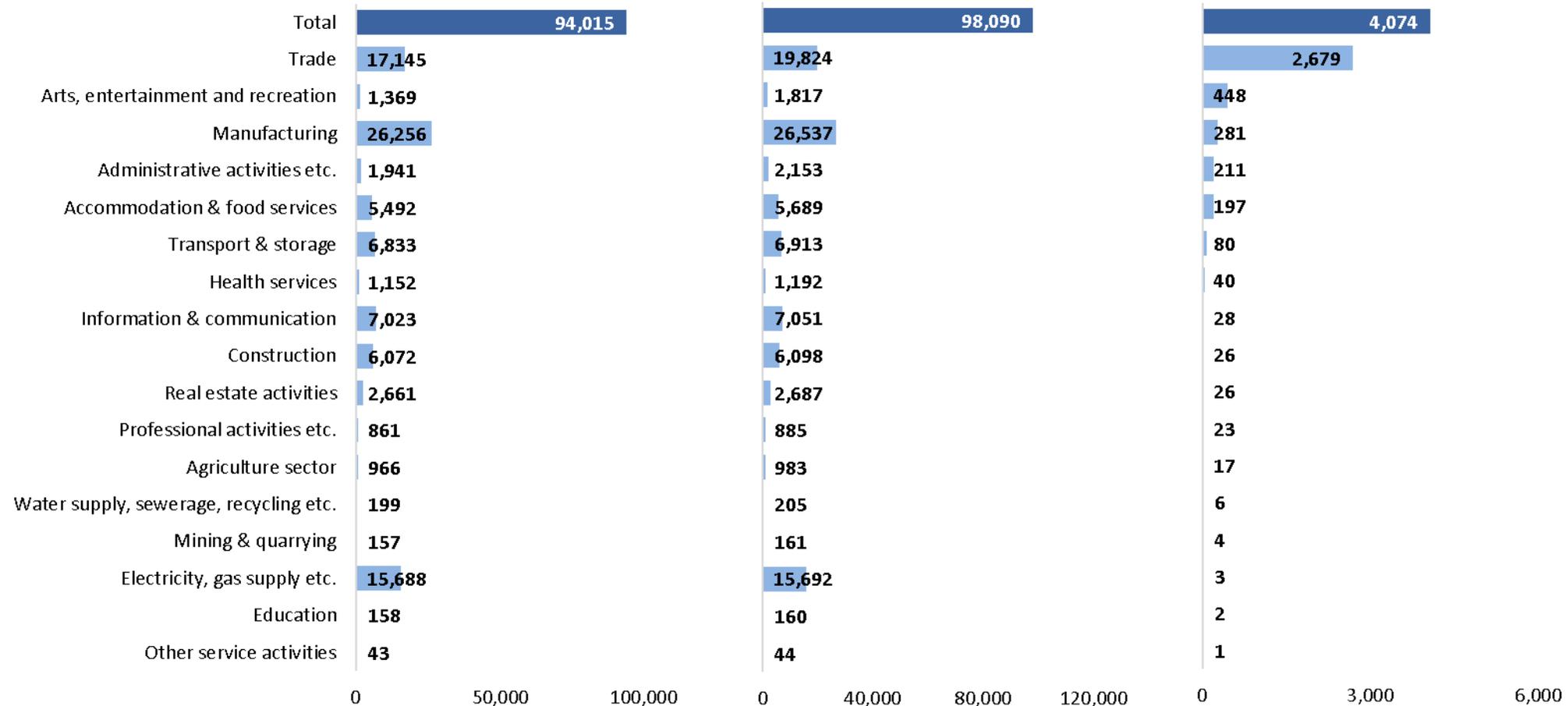
## Liabilities Adjustment is estimated at €4bn.

- ✓ The arts etc. sector, accounting for only 0.6% of the sample, is second in increased liabilities – even higher than manufacturing.

Liabilities before COVID-19 (figures in €mn)

Estimated liabilities 2020 (figures in €mn)

Additional liabilities (figures in €mn)





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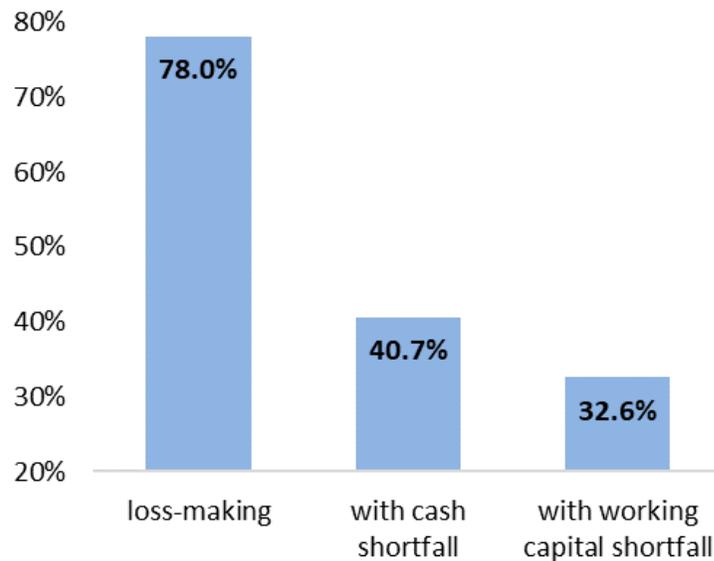
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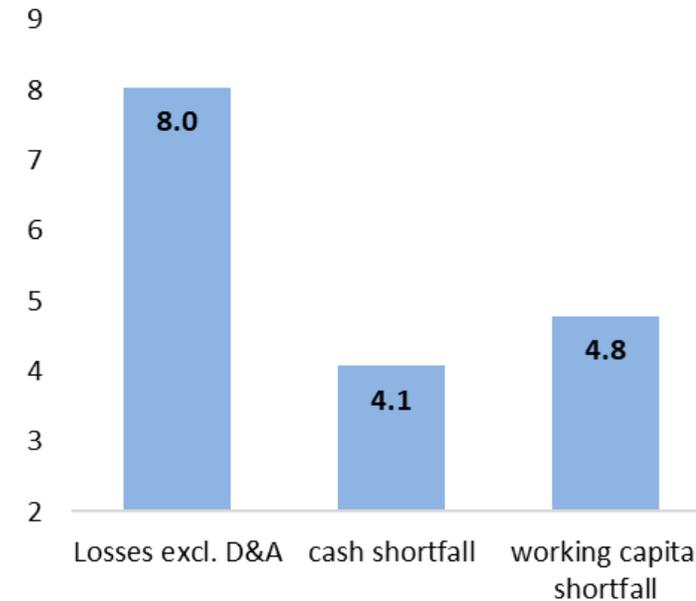
## Assessing Corporate Distress: An Extremely Uneven Picture

- ✓ On an aggregate level, we have already estimated that Greek corporations appear to be only marginally loss-making on the EBITDA level (post-COVID EBITDA of €-127mn), but the aggregate level is misleading:
  - 78% of firms are loss-making to a grand total of €8bn losses excluding depreciation and amortization.
  - 40.7% of firms have a negative cash position (cash shortfall) of €4.1bn.
  - 32.6% of firms will record a working capital shortfall of €4.8bn.

**Distressed Firms % of Total**



**Financial Shortfall (figures in €bn)**

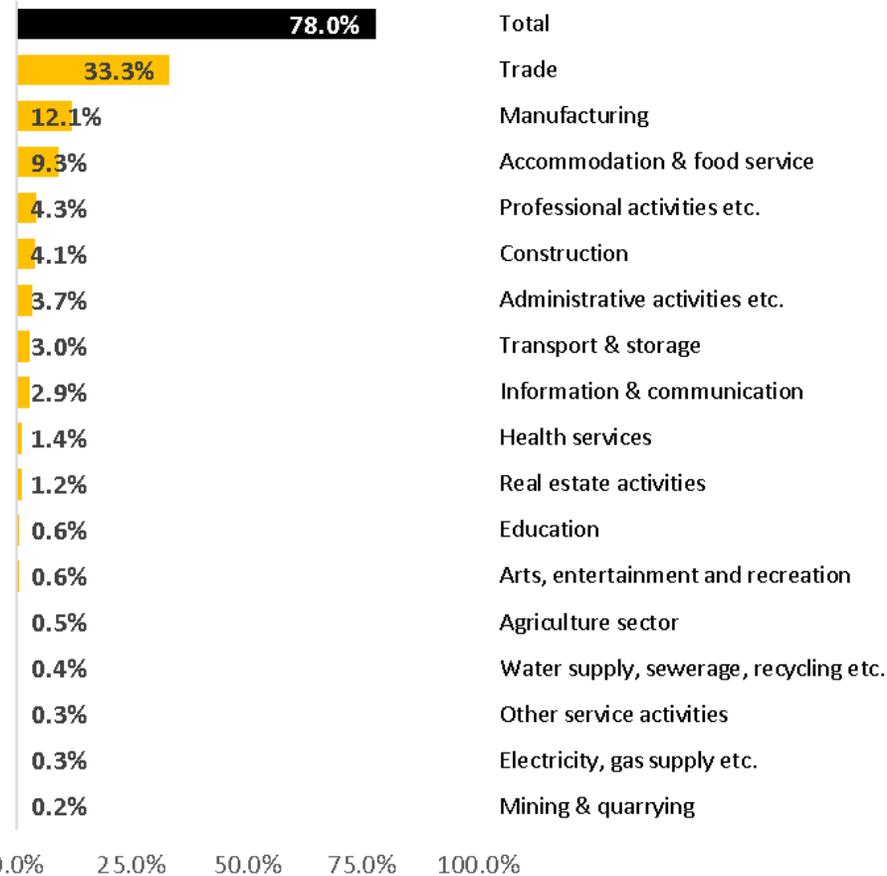


- ✓ If the starting working capital is negative, it is set at zero.
- ✓ D&A: Depreciation and amortization.

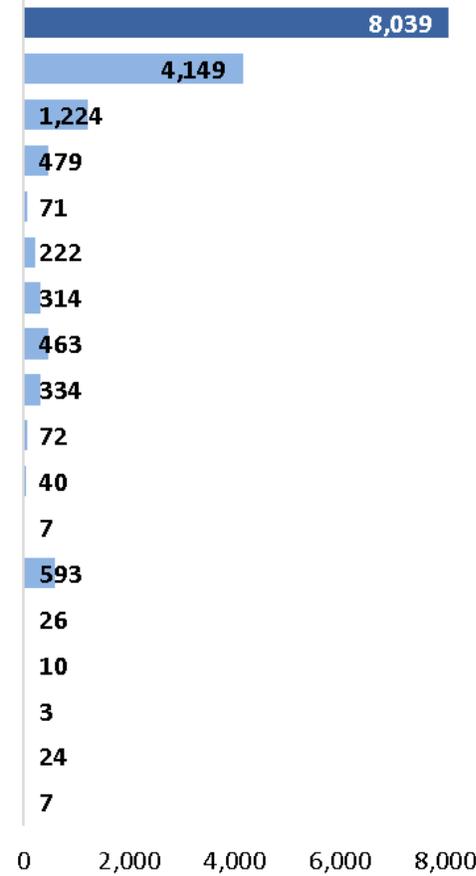
# Assessing Corporate Distress: Loss Distribution by Sector

✓ More than half of the estimated losses come from trade.

Distressed Firms % of Total



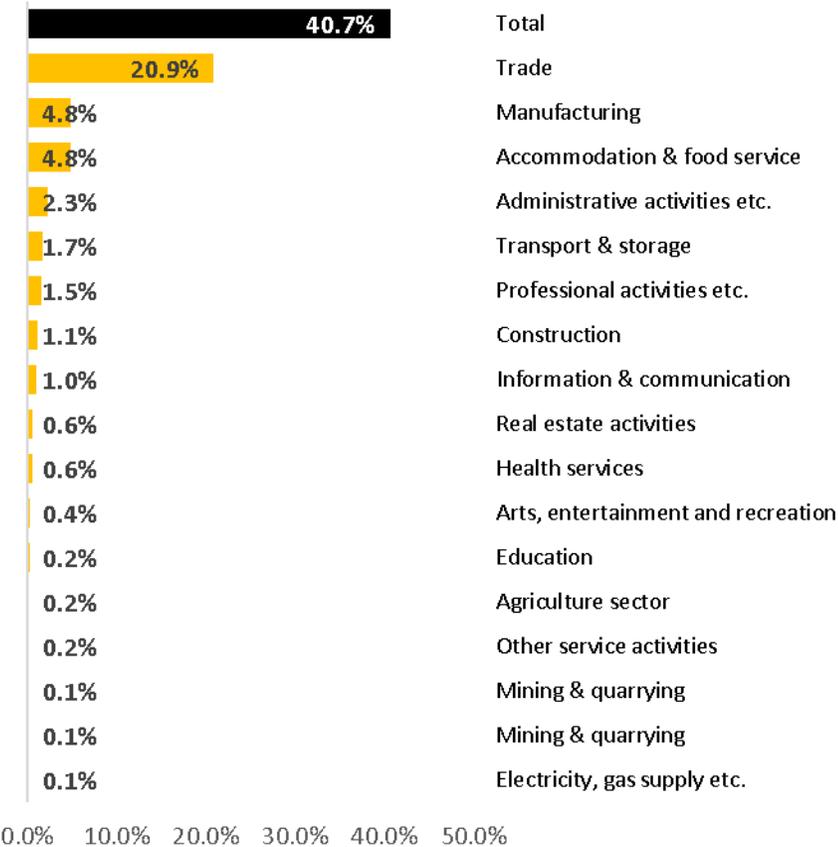
Losses excl. D&A, (figures in €mn)



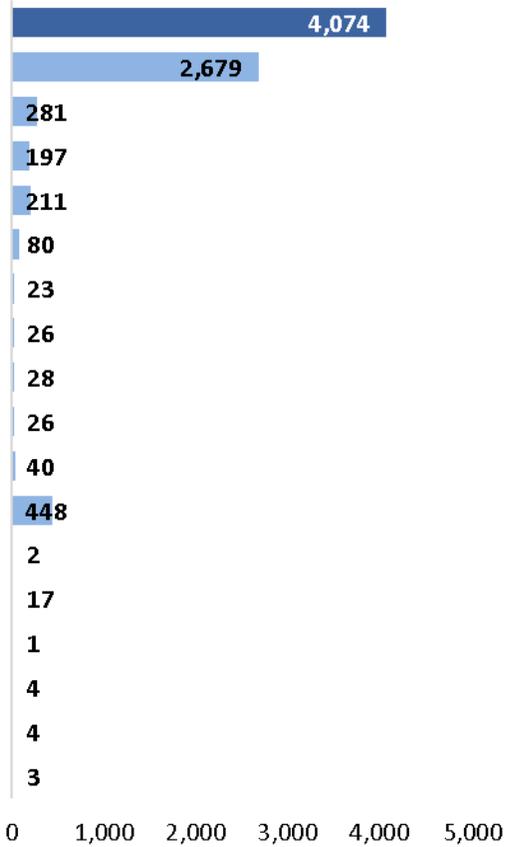
# Assessing Corporate Distress: Cash-Shortfall Distribution by Sector

- ✓ The trade, manufacturing and accommodation and food services sectors contain the most vulnerable firms and need to obtain credit support to cover cash shortfall.

Distressed Firms % of Total



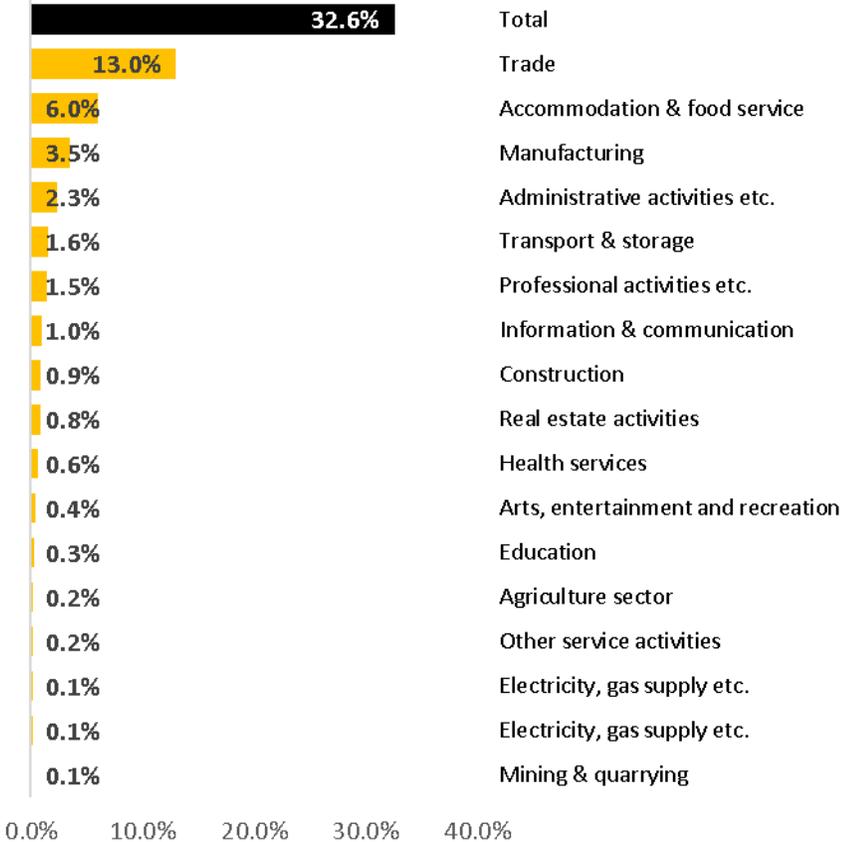
Cash Shortfall, (figures in €mn)



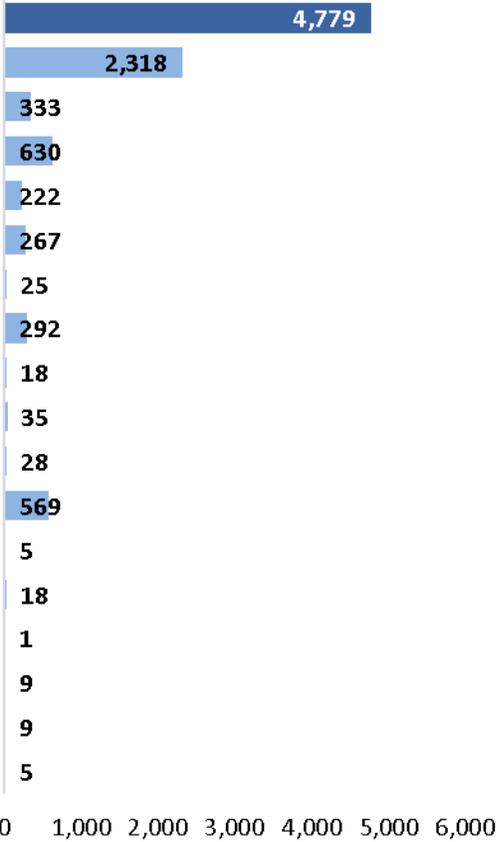
# Assessing Corporate Distress: Working Capital Shortfall Distribution by Sector

✓ The arts etc. sector makes up only 0.4% of vulnerable firms, but its liquidity pressure is the third-highest, after trade and manufacturing.

**Distressed Firms % of Total**



**Working Capital Shortfall, (figures in €mn)**



✓ If the starting working capital is negative, it is set at zero.



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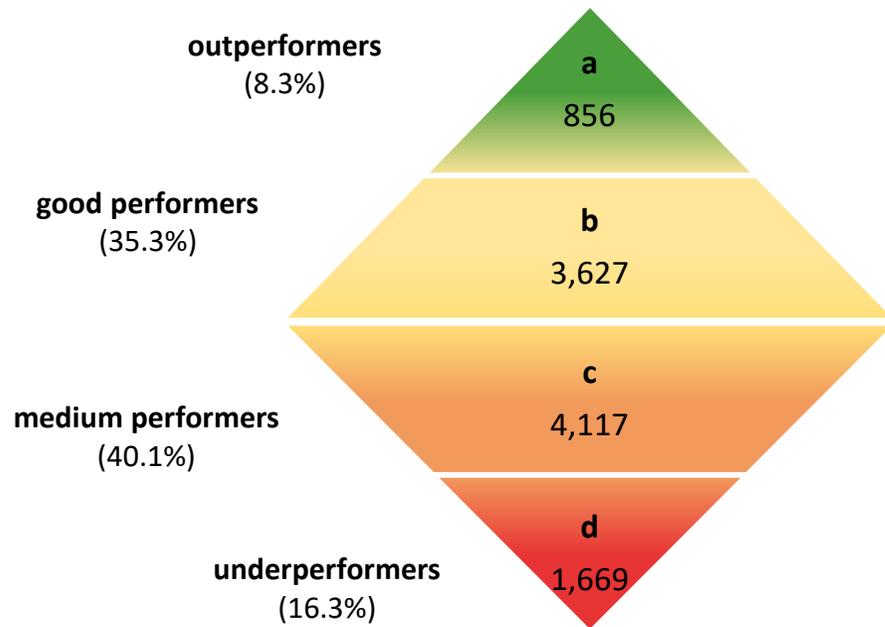
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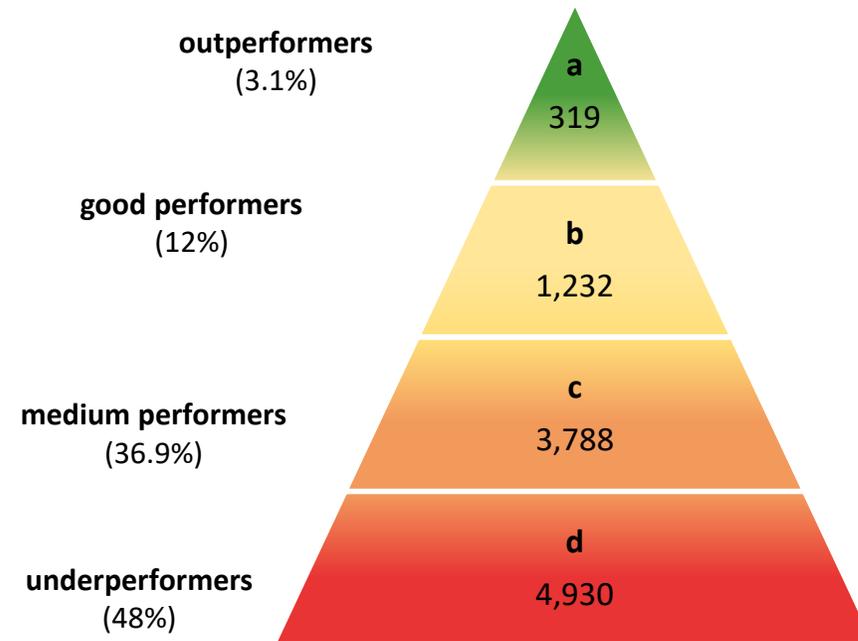
# ERS: COVID-19 Shock Alters the Rating Distribution of Greek Corporations, Forcing a Migration to “d” Ratings



Enterprise Breakdown by ERS rating,  
*pre COVID-19*



Enterprise Breakdown by ERS rating\*,  
*2020 estimates*



# Final Rating Transition Matrix: A drastic deterioration of Greek corporate ratings



## Number of enterprises

		2020 estimates				Total
		a	b	c	d	
pre COVID-19	Final Ratings					
	a	268	294	280	14	856
	b	51	876	1,914	786	3,627
	c	0	60	1,580	2,477	4,117
	d	0	2	14	1,653	1,669
Total		319	1,232	3,788	4,930	10,269

## Transition rates (pre COVID-19 to 2020 estimates)

		2020 estimates			
		a	b	c	d
pre COVID-19	Final Ratings				
	a	31.3%	34.3%	32.7%	1.6%
	b	1.4%	24.2%	52.8%	21.7%
	c	0.0%	1.5%	38.4%	60.2%
	d	0.0%	0.1%	0.8%	99.0%

## Highlights

- ✓ The most unfavourable rating transitions are:
  - Pre-COVID-19 medium performers (“c”) to underperformers (“d”) (60.2%).
  - Pre-COVID-19 good performers (“b”) to medium performers (“c”) (52.8%).
- ✓ Even the outperformers (“a”) lose ground.

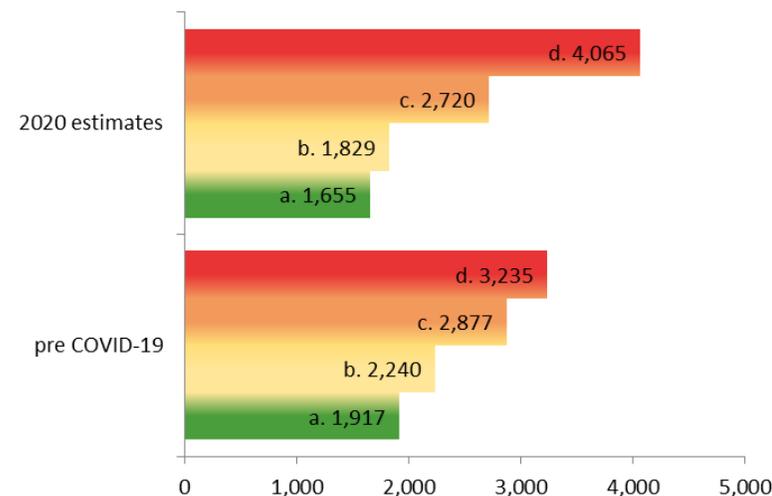
# Liquidity Transition Matrix: Corporate liquidity positions deteriorate even further



## Number of enterprises

		2020 estimates				
Liquidity Ratings		a	b	c	d	Total
pre COVID-19	a	1,531	329	36	21	1,917
	b	117	1,364	671	88	2,240
	c	6	124	1,887	860	2,877
	d	1	12	126	3,096	3,235
Total		1,655	1,829	2,720	4,065	10,269

## Enterprise Breakdown by ERS rating



## Transition rates (pre COVID-19 to 2020 estimates)

		2020 estimates			
Liquidity Ratings		a	b	c	d
pre COVID-19	a	79.9%	17.2%	1.9%	1.1%
	b	5.2%	60.9%	30.0%	3.9%
	c	0.2%	4.3%	65.6%	29.9%
	d	0.0%	0.4%	3.9%	95.7%

## Highlights

- ✓ The most populous pre-COVID-19 “d”-rating class (32% of the total sample) is estimated to increase even more (to 40%), drawing mostly from “c”-rated companies.
- ✓ Firms with “a”-rated liquidity appear resilient.



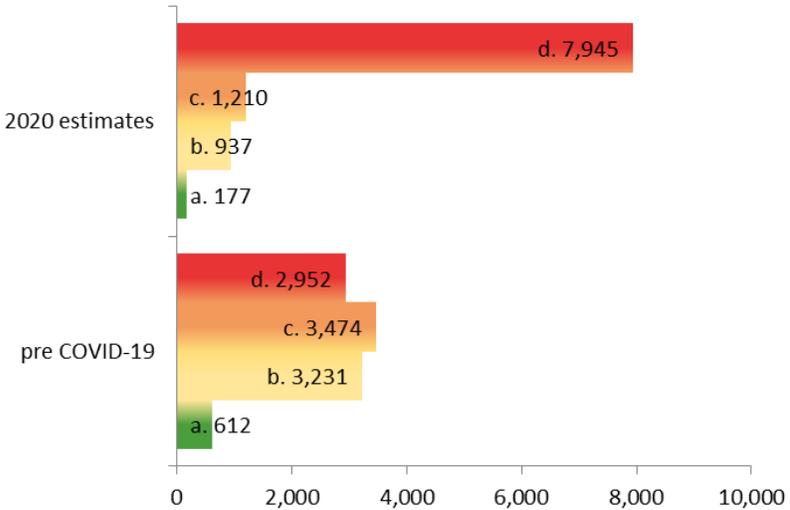
# Profitability Transition Matrix: Fragile profitability for all ratings



## Number of enterprises

		2020 estimates				Total
Profitability Ratings		a	b	c	d	
pre COVID-19	a	167	273	71	101	612
	b	6	610	623	1,992	3,231
	c	4	42	507	2,921	3,474
	d		12	9	2,931	2,952
Total		177	937	1,210	7,945	10,269

## Enterprise Breakdown by ERS rating



## Transition rates (pre COVID-19 to 2020 estimates)

		2020 estimates			
Profitability Ratings		a	b	c	d
pre COVID-19	a	27.3%	44.6%	11.6%	16.5%
	b	0.2%	18.9%	19.3%	61.7%
	c	0.1%	1.2%	14.6%	84.1%
	d	0.0%	0.4%	0.3%	99.3%

## Highlights

- ✓ Post-COVID-19, “d”-rated firms make up almost 77.4% of the sample.
- ✓ Few enterprises will maintain satisfactory profitability levels in 2020.

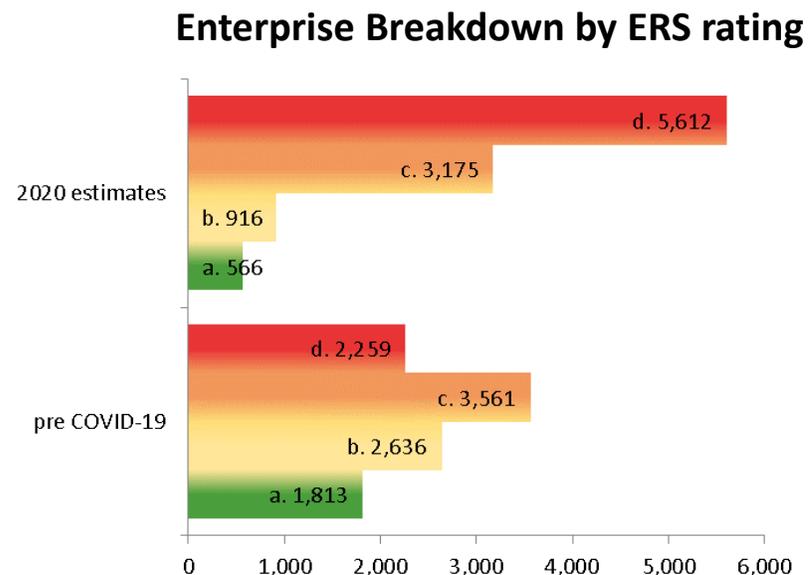
# Solvency Transition Matrix: increased insolvency risk



**Number of enterprises**

2020 estimates

Solvency Ratings	2020 estimates				Total
	a	b	c	d	
a	532	277	871	133	1,813
b	32	602	1,025	977	2,636
c	1	35	1,257	2,268	3,561
d	1	2	22	2,234	2,259
Total	566	916	3,175	5,612	10,269



## Transition rates (pre COVID-19 to 2020 estimates)

2020 estimates

Solvency Ratings	2020 estimates			
	a	b	c	d
a	29.3%	15.3%	48.0%	7.3%
b	1.2%	22.8%	38.9%	37.1%
c	0.0%	1.0%	35.3%	63.7%
d	0.0%	0.1%	1.0%	98.9%

## Highlights

- ✓ An additional 33% of enterprises are estimated to encounter serious solvency problems and receive a “d” rating in terms of solvency in 2020.
- ✓ The most unfavourable rating transitions are:
  - Pre-COVID-19 firms rated “c” to “d” (63.7%).
  - Pre-COVID-19 firms rated “a” to “c” (48%).



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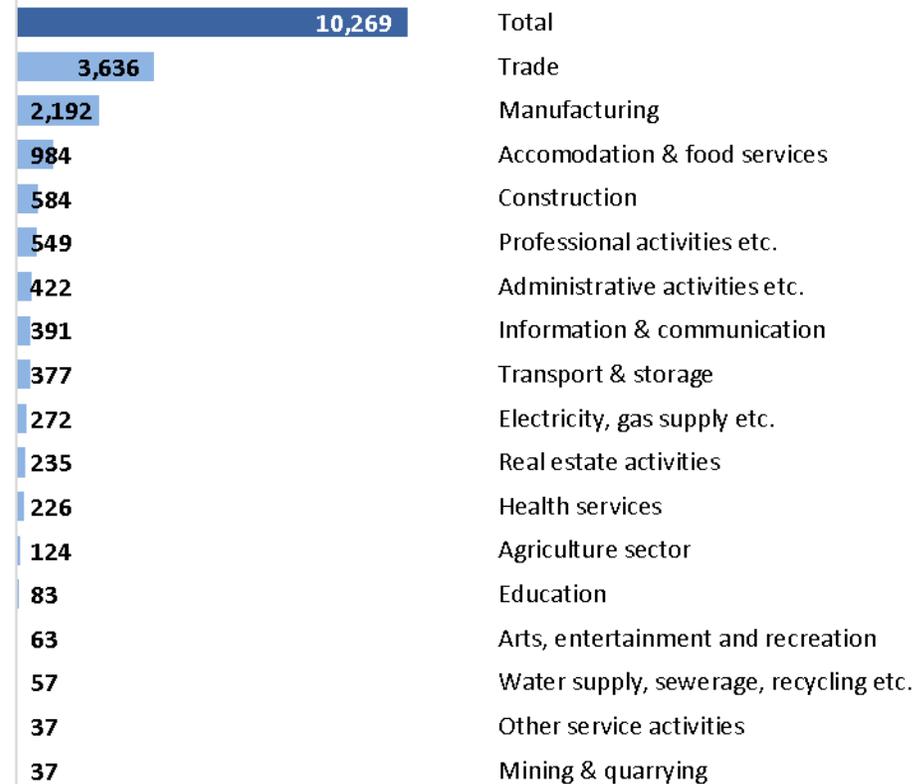
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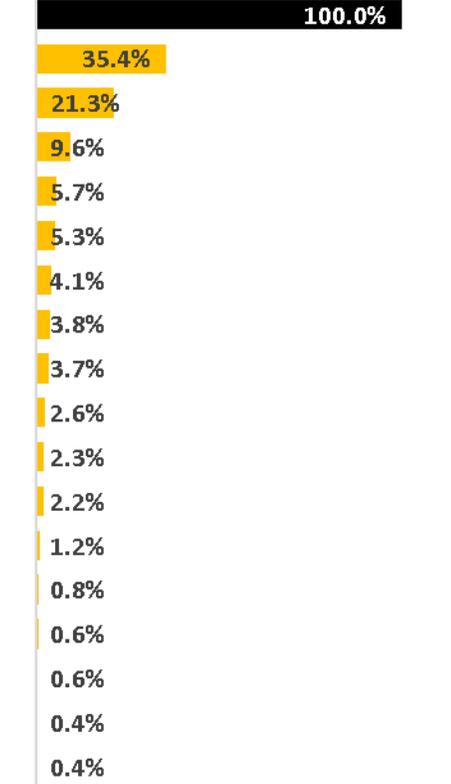
# Appendix I: Enterprise Sample Description

- ✓ We examine all non-financial sectors of economic activity according to the NACE rev. 2 classification.
- ✓ For our analysis, we used the sample of selected enterprises described in the methodological framework of our ERS, published in our September 2019 report. The data reference year is 2017. We assume that in 2019, financial conditions were not drastically different from 2017.
- ✓ The firm distribution by sector is presented below.

### Firms by Sector



### Share of Firms by Sector



## Appendix II: Demand Shock on Sales 2020, Qualitative Assumptions (a)



Piraeus Bank Research estimates, as of 3/7/2020

NACE rev. 2		Demand shock on 2020 sales Qualitative assumptions
Code	Description	
A	Agriculture	-5% 2020e
B	Mining	-15% 2020e
C	Manufacturing	-15% 2020e
except for		
	10   Manufacture of food products	-5% 2020e
	11   Manufacture of beverages	-15% Q1, -25% Q2, -15% Q3-Q4 2020e
	12   Manufacture of tobacco products	0% 2020e
	14   Manufacture of wearing apparel	-15% Q1, -40% Q2, -15% Q3-Q4 2020e
	15   Manufacture of leather and related products	-15% Q1, -40% Q2, -15% Q3-Q4 2020e
	17   Manufacture of paper and paper products	0% 2020e
	19   Manufacture of coke and refined petroleum products	-15% Q1, -40% Q2, -15% Q3-Q4 2020e
	20   Manufacture of chemical products	0% 2020e
	21   Manufacture of pharmaceutical products and preparations	+20% 2020e
	22   Manufacture of rubber and plastic products	0% 2020e
D	Electricity, gas, steam and air conditioning supply	-10% 2020e
E	Water supply; Sewerage etc.	-15% 2020e
F	Construction	-15% 2020e
G	Wholesale and retail trade	-15% Q1, -75% Q2, -15% Q3-Q4 2020e
except for		
	46.3   Wholesale of food, beverages and tobacco	-15% 2020e
	46.46   Wholesale of pharmaceutical goods	-15% 2020e
	46.75   Wholesale of chemical products	-15% 2020e
	47.11   Retail sale in non-specialised stores with food, beverages or tobacco predominating (supermarkets)	0% Q1, +15% Q2, 0% Q3-Q4 2020e
	47.2   Retail sale of food, beverages and tobacco in specialised stores	-15% 2020e
	47.73   Dispensing chemist in specialised stores	0% Q1, +10% Q2, 0% Q3-Q4 2020e
H	Transportation and storage	
	49   Land transport	-15% Q1, -75%Q2, -15% Q3-Q4 2020e
	50   Water transport	-40% 2020e
	51   Air transport	-15% Q1, -90% Q2, -50% Q3-Q4 2020e
	52   Warehousing and support activities for transportation	-15% 2020e
	53   Postal and courier activities	0% 2020e



## Appendix II: Demand Shock on Sales 2020, Qualitative Assumptions (b)



Piraeus Bank Research estimates, as of 3/7/2020

NACE rev. 2		Demand shock on 2020 sales Qualitative assumptions
Code	Description	
I	Accommodation and food services	
	55   Accommodation	-15% Q1, -90% Q2, -70%Q3, -50% Q4 2020e
	56   Food and beverage service activities	-15% Q1, -75% Q2, -50%Q3, -15% Q4 2020e
J	Information and communication	-15% 2020e
	except for	
	61   Telecommunications	-5% 2020e
L	Real estate activities	-15% Q1, -35% Q2-Q3, -15% Q4 2020e
M	Professional service activities etc.	-15% 2020e
	except for	
	71   Architectural and engineering activities etc.	-15% Q1, -75% Q2, -15% Q3-Q4 2020e
N	Administrative and support service activities	-15% 2020e
	except for	
	77   Rental and leasing activities	-15% Q1, -50% Q2, -15% Q3-Q4 2020e
	79   Travel agency etc.	-15% Q1, -90% Q2, -70%Q3, -50% Q4 2020e
	82   Office administrative activities etc.	-15% Q1, -75% Q2, -15% Q3-Q4 2020e
P	Education	0% Q1, -20% Q2-Q3, -15% Q4 2020e
Q	Human health and social work activities	-15% 2020e
R	Arts, entertainment and recreation	-15% Q1, -90%Q2, -15% Q3-Q4 2020e
S	Other service activities	-5% Q1, -30% Q2, -15% Q3-Q4 2020e

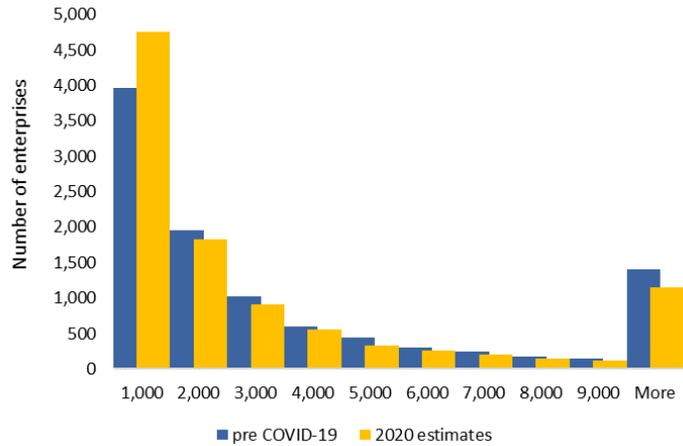
- ✓ Worst Q 2020: period of lockdown and gradual resumption of economic activities.
- ✓ After the initial shock, despite the resumption of economic activities, a preserved negative percentage of COVID-19 pandemic impact is assumed due to some degree of contained economic behaviour.
- ✓ Demand shock scenarios on revenues under the assumption of controlled epidemiological conditions.



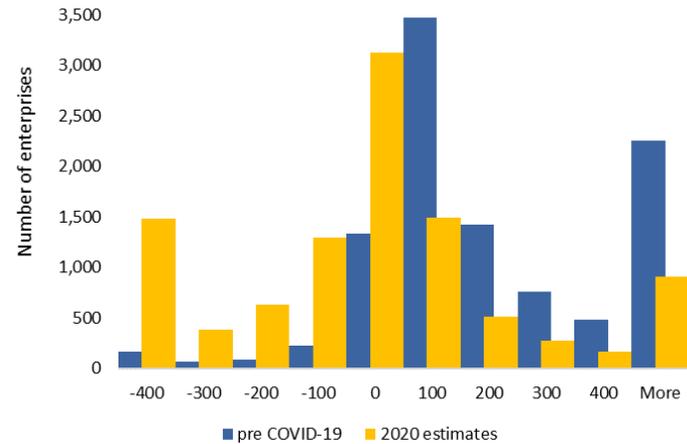
# Appendix III-a: COVID-shock has led to a downward shift in the entire distribution of turnover, profitability, equity and cash and an upward shift in the distribution of total liabilities.



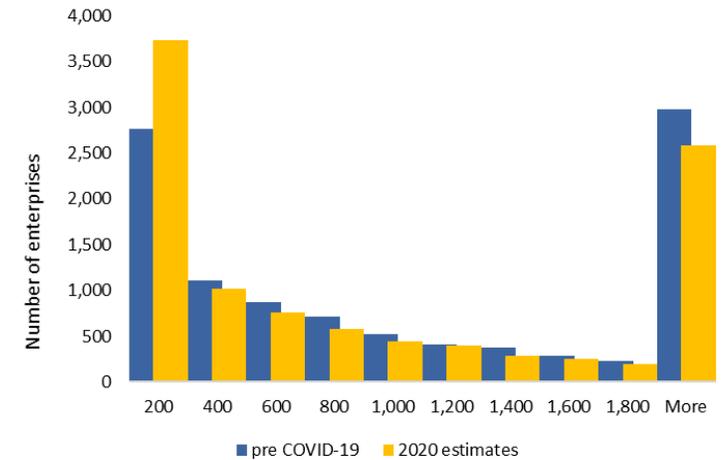
**Turnover (in €K)**



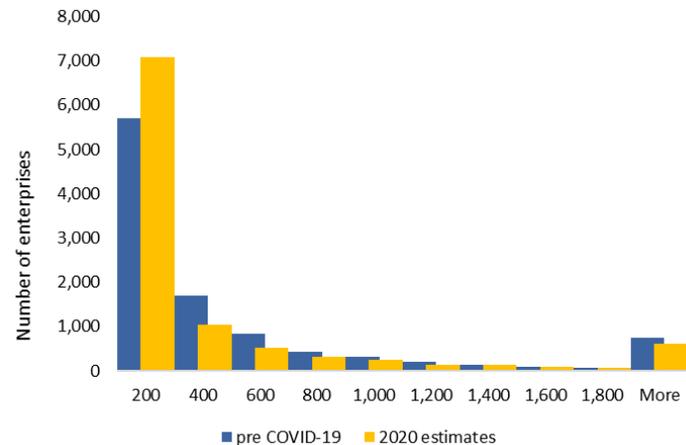
**EBITDA (in €K)**



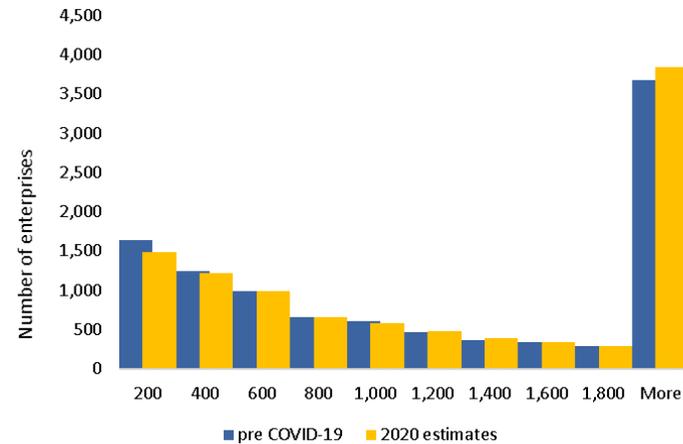
**Equity (in €K)**



**Cash (in €K)**



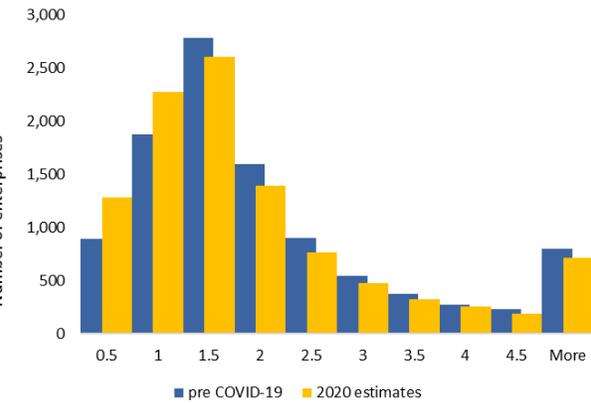
**Total liabilities (in €K)**



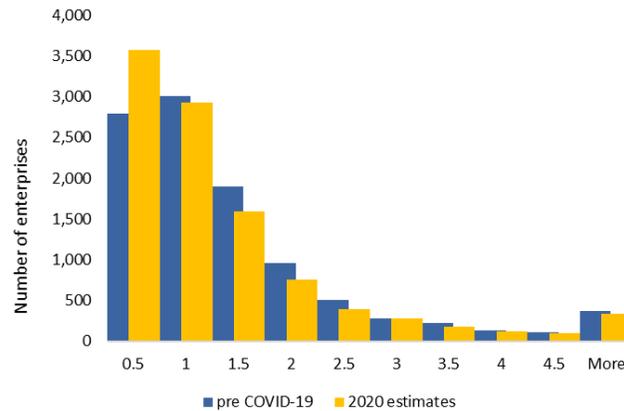
# Appendix III-b: Similarly, the recession is reflected in the downward shift in the distribution of liquidity, profitability and solvency ratios.



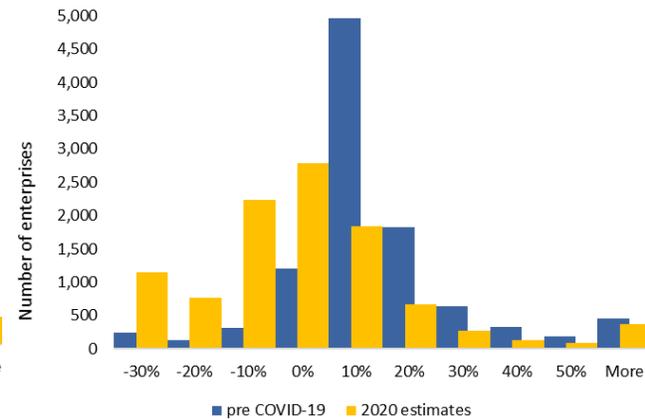
### Current Ratio



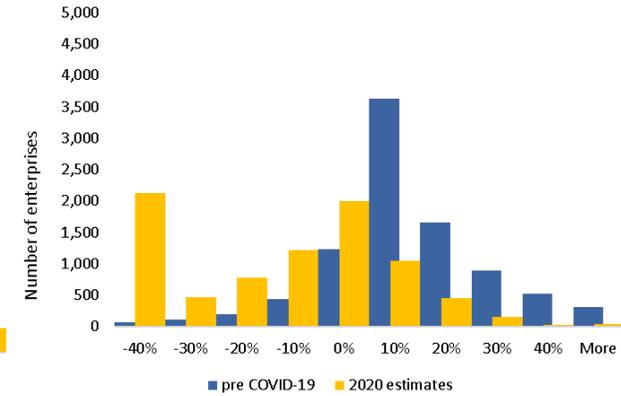
### Quick Ratio



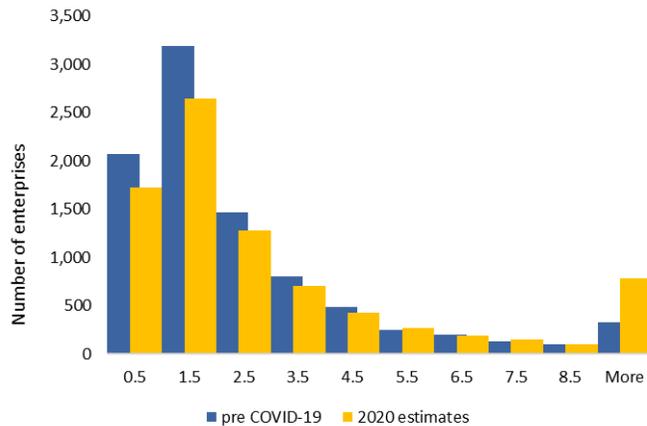
### EBITDA Margin



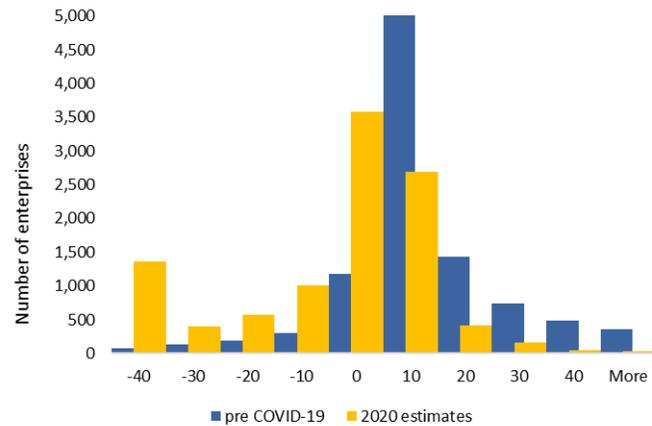
### Return on Equity<sup>1</sup>



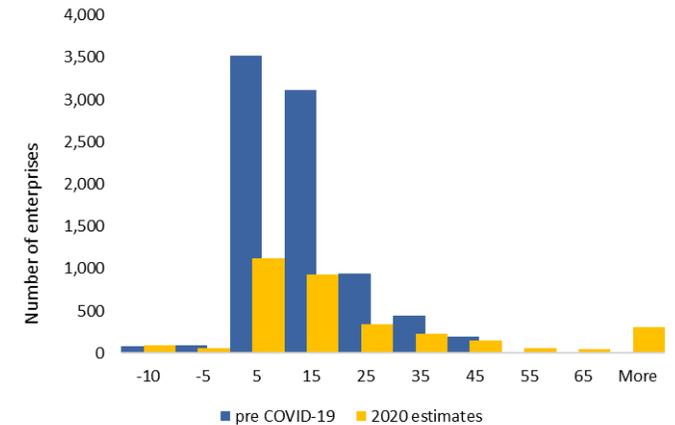
### Liabilities to Equity<sup>1</sup>



### Financial Expense Coverage Ratio



### Net Debt to EBITDA<sup>2</sup>



1. Excluding 1,207 firms with negative equity from the pre-COVID-19 period and 1,983 from the 2020 estimates (incalculable ratios).
2. Excluding 1,880 firms with negative EBITDA from the pre-COVID-19 period and 6,924 from the 2020 estimates (incalculable ratios)



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