BANCA D'ITALIA
EUROSISTEMA

WORKSHOP

LA STRUTTURA PRODUTTIVA ITALIANA A FRONTE DEI RECENTI SCONVOLGIMENTI GLOBALI

The features of equity capital increases in Italian corporates

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1. Introduction

Background and motivation

- Economic losses inflicted by the pandemic shock caused severe capital shortfalls to non-financial firms (NFCs) addressed, mostly, through increasing reliance on debt financing. Following short-term liquidity supports, there has been a call for public measures to **support firms' recapitalization** in the medium term and avoid the rise of **debt overhang problems** and **solvency risks**.

- National level measures were adopted to **fund -directly- the recapitalization** of Covid affected NFCs (endowments DE, € 100*B*; ES 11*B*; FR 20*B*; IT 46*B*) and **indirectly** through incentives for shareholders. Different schemes at **European level** have also been discussed (temporary increase of corporate tax in exchange of equity funding; adoption of hybrid capital instrument/subordinated debt).

- Evidence about the dynamics and features of capital increases is limited: see Hotchkiss et al., (2020) on **the debt and equity financing behavior** of listed firms during the pandemic; Orlando and Rodano, (2020) on the **risk of capital shortages during the pandemic** .

1. Introduction

What this work does

- Provides evidence on capital increases by Italian non-financial corporations (NFCs) between 2008 and 2020. Stylized facts and insights on the **economics of capital increases** are provided, and implications for the **design** of public support programs are discussed.

Results preview

- **1st**, **the share of NFCs** that increased their capital (2008-20 period) is limited and hovers around 1.1 per cent (4.3 per cent of revenues).

- **2nd**, **firms size** plays a **relevant role**. Smaller firms are less likely to raise new equity funds relative to larger firms. The effect of firms' risk is limited.

- **3rd**, bank **lending relationships** play a relevant role. Firms with a widely spread distribution of loans across banks are substantially more likely to increase their equity capital base (relationship lending, soft budget constraint argument); surprisingly, the **concentration of shareholders** is less important.

1. Introduction

Results preview

- **4th**, on the **use of equity funds**: financially sound firms use new capital mostly to **finance investments**, which in turn expand their sales, while fragile firms tend to **rebalance their financial structure** and accumulate liquidity buffers, with positive outcomes on their likelihood of survival.

- **5th**, investments and sales growth increase more when recapitalizations are accompanied by the **entrance of new shareholders**.

- **6th**, on the **trade-off between equity and debt financing**: exogenous negative shocks to the supply of credit increase the likelyhood of capital increases. Thus when credit availability ease (*e.g.* state guarantee programs) incentive to raise equity are lower.

2. Data and descriptive statistics

Capital data: the Italian Business Register (InfoCamere)

- Capital increases are identified as a positive **difference between a firm's capital** at date *t* and the last nominal capital value recorded before date *t*. Either capital injections (*aumento di capitale a pagamento*) or the conversion of reserves into equity capital (*aumento di capitale gratuito*) are considered.

Other firms' data

- Financial information (Cerved Group), credit information such as the number of credit relationships and measures of lenders concentration (Credit Register), the ownership structure of firms, including changes in the number of shareholders (InfoCamere), firms' survival after a recapitalization in terms of both market exits (Business Register), or non-performing credit status (Credit Register).

- Our final sample includes about 1.6 million NFCs active over the 2008-20 period, averaging around **740,000 yearly observations**.

2. Data and descriptive statistics

Tab. 1: Recapitalizations over the 2008-20 period

Year	N. Firms	% firms [1]	% firms by revenues [2]	Capital increases	Capital increases over equity	Capital increase over fin debt	Capital increase over cash holdings
	units	*per cent*	*per cent*	*billion*	*per cent*	*per cent*	*per cent*
2008	10,730	1.57	5.06	10.2	30.38	19.98	153.99
2009	9,710	1.39	6.09	13.4	36.84	26.82	201.56
2010	9,706	1.34	4.19	9.8	33.31	24.28	198.45
2011	8,267	1.12	6.23	8.2	14.81	12.72	75.81
2012	8,194	1.09	4.51	7.9	26.47	22.20	172.54
2013	7,287	0.98	4.95	7.1	15.17	11.70	95.03
2014	7,285	0.98	4.85	8.1	16.02	14.73	89.01
2015	7,267	0.98	3.61	8.7	21.24	19.56	132.29
2016	7,423	0.98	3.52	8.0	22.64	29.93	139.48
2017	7,345	0.96	3.50	4.9	11.46	11.87	53.85
2018	7,411	0.96	3.05	5.6	9.67	21.97	85.96
2019	7,684	0.98	3.15	5.9	22.91	27.52	88.46
2020	8,051	1.00	3.63	6.3	17.60	29.05	103.08
Average	**8,182**	**1.10**	**4.33**	**8.00**	**21.43**	**20.95**	**122.27**

- On average around 8,000 firms increased their capital yearly, slightly more than **one per cent active NFCs** (a larger share in terms of total revenues).
- The **amount of capital raised** constitutes about one-fifth of firms' equity or financial debt.

2. Data and descriptive statistics

Tab. 2: Recapitalizations and firm characteristics

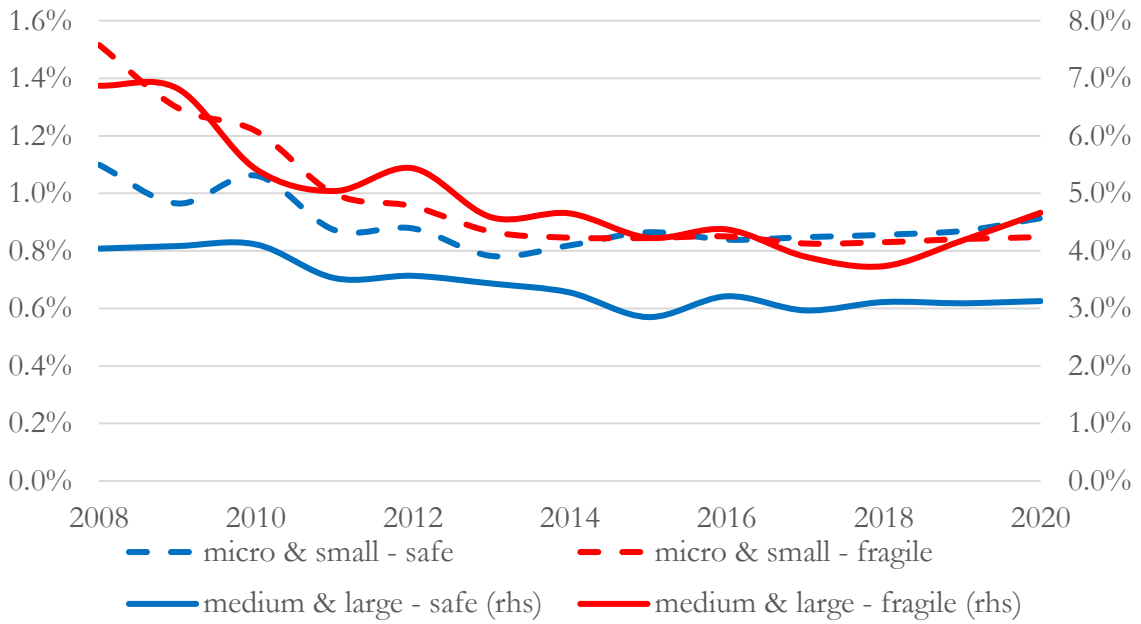
	Revenues		Leverage		Revenue growth		HHI Banks		HHI Shareholders	
	Recapitalization	*Other firms*	*Recapitalization*	*Other firms*	*Recapitalization*	*Other firms*	*Recapitalization*	*Other firms*	*Recapitalization*	*Other firms*
10th perc.	113.00	34.00	0.10	0.08	-0.16	-0.48	0.17	0.27	0.25	0.28
Median	1778.00	364.00	0.62	0.80	0.08	0.01	0.50	0.76	0.50	0.50
75th perc.	6318.00	1219.00	2.00	2.87	0.30	0.14	1.00	1.00	0.91	0.91

- The **median firm** that increases its equity capital is typically **larger** than the median Italian firm in terms of revenues, displays **higher revenues growth** and **lower leverage**.

- No substantial differences in the ownership structure, while the **debt structure** of firms that recapitalize tends to be **distributed across a larger number of lenders**.

2. Data and descriptive statistics

Fig. 1: Capital increases by firm size and risk



- For **smaller firms**, the recapitalization rate is relatively stable and **similar** across risk classes (dashed lines).
- For **larger firms** (solid lines), in contrast, there are differences between safe and fragile in their propensity to recapitalize: with fragile ones being **more likely** to increase their capital.

3. Methodology

Our analytical setting revolves around **conditional correlations** between *(1)* firms' characteristics and the probability of a capital increase **(linear probability model)**, and *(2)* firms' economic and survival outcomes following a capital increase **(local projections)**.

$$C_{i,t} = X_{i,t-1}\beta + \alpha_{s(i)} + \gamma_{g(i)} + \delta_t + \epsilon_{i,t} \quad (1)$$

$C_{i,t}$ is a dummy for capital increases in year t; $X_{i,t-1}$ is a vector of firm i characteristics in $t-1$; $\alpha_{s(i)}$, $\gamma_{g(i)}$, and δ_t are indicators of firm's sector of economic activity (2-digit Ateco classification), province and of the reference year, respectively.

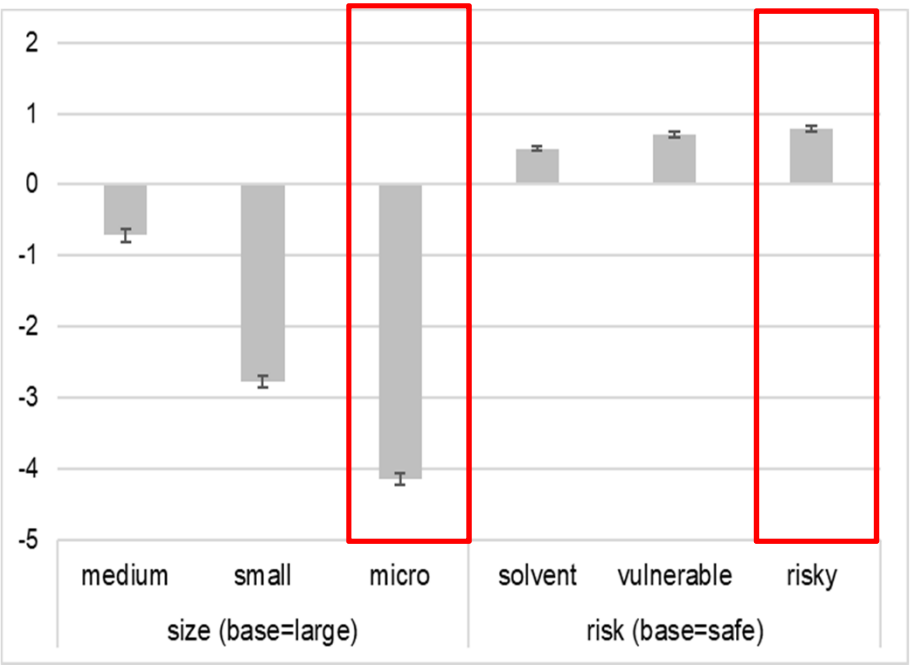
$$Y_{i,t+s} = \beta C_{i,t} + X_{i,t-1}\zeta + CX_{i,t}\eta + \alpha_{s(i)} + \gamma_{g(i)} + \delta_t + \epsilon_{i,t} \quad (2)$$

where: $Y_{i,t+s}$ is the economic performance or survival outcome of interest measured s years after the reference year, with $s \in \{0,1,2\}$; $CX_{i,t}$ is a **vector of interactions** between the dummy for capital increases $C_{i,t}$ and firms' characteristics $X_{i,t-1}$.

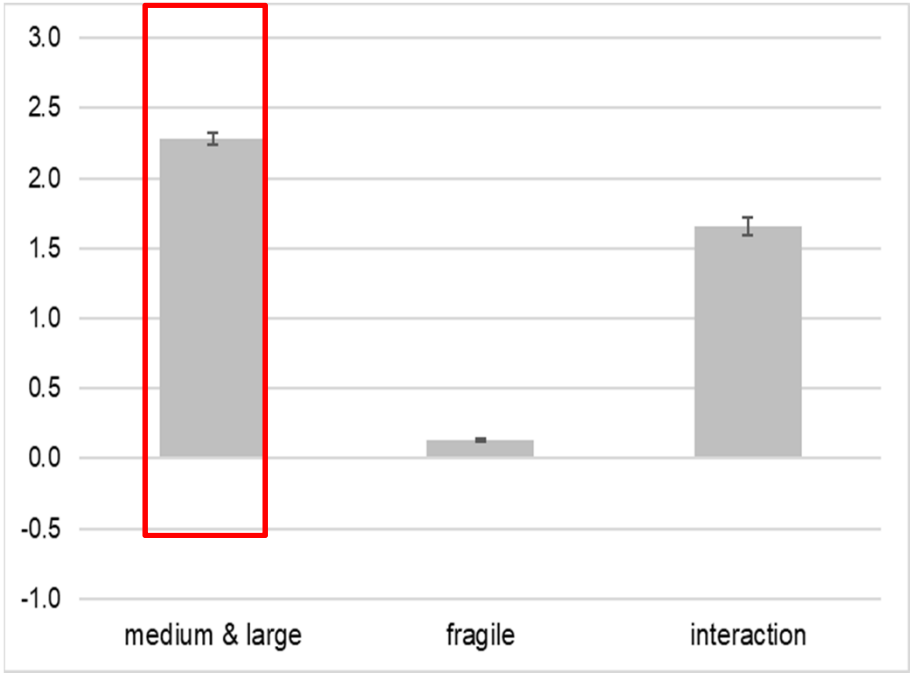
Which firms are more likely to increase their capital: the size and risk profile

- micro firms are about 4 percentage points **less likely to recapitalize** than the larger ones (panel A); **riskier firms** are more likely to recapitalize (less than 1 p.p. difference across risk classes) mostly driven by fragile firms of larger size (panel B)

a) by size and risk



b) interaction between size and risk

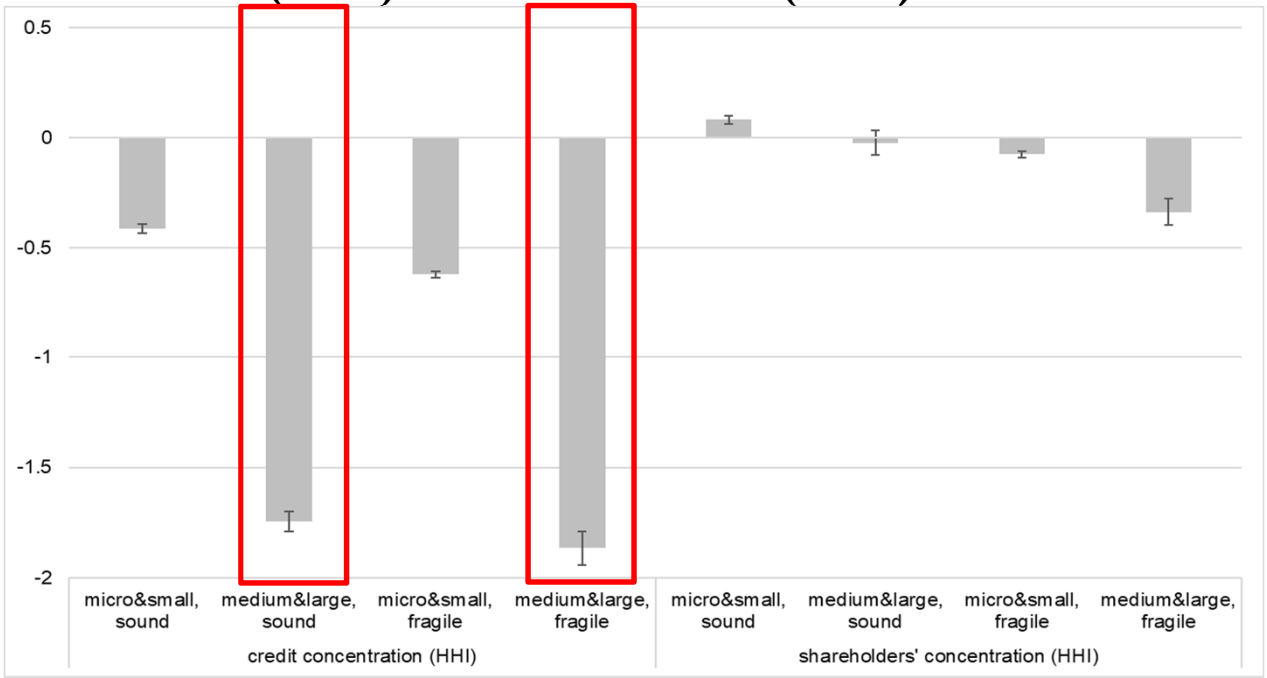


Which firms are more likely to increase their capital: the capital structure

- **Lower lenders' concentration** associates with higher likelihood of recapitalization; the effect is of a higher magnitude for **larger firms**. Concentration of lenders further decreases after the recapitalization.

- The effect of shareholders' concentration is instead less relevant.

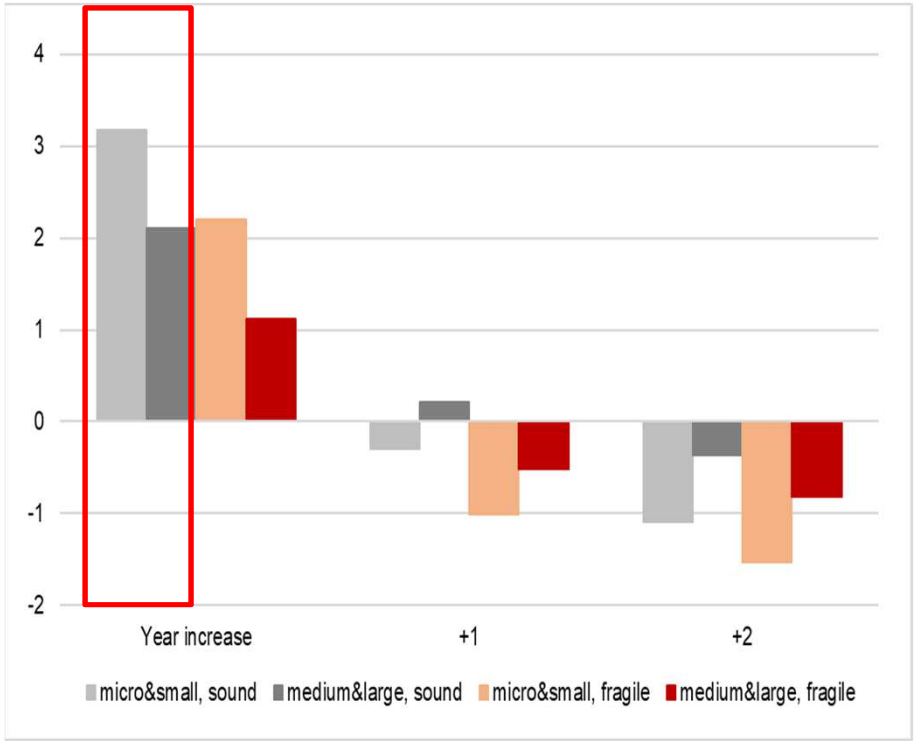
Creditors' (LHS) and shareholders' (RHS) concentration



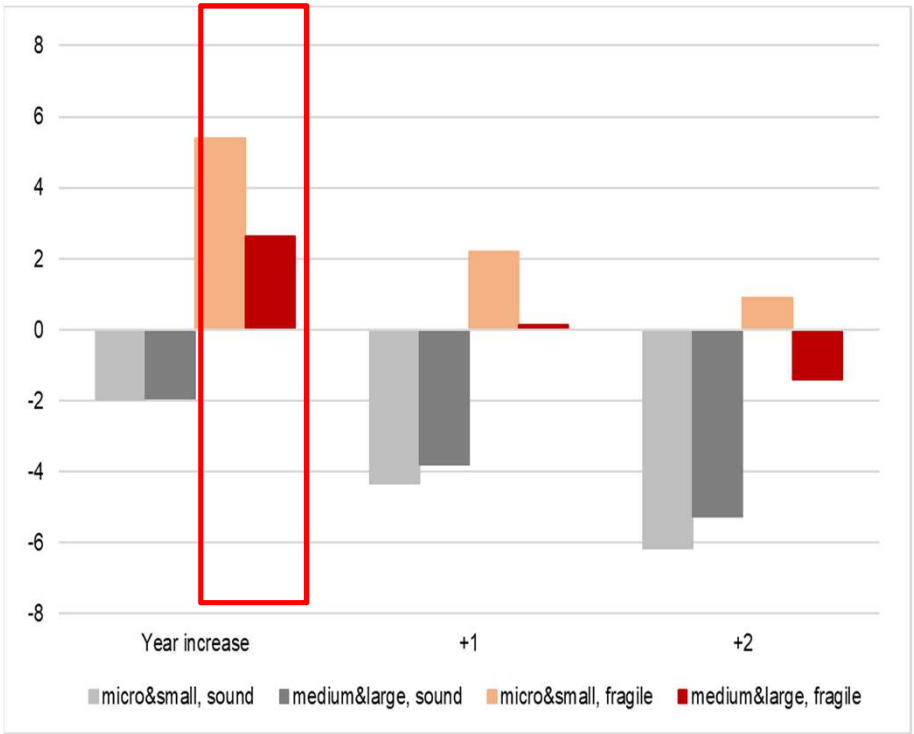
The use of new equity funds: investments and liquidity

- The variation of the **investment ratio** is positive **in the year** of the recapitalization and more pronounced for **sound** firms. The **liquidity ratio** increases for **fragile firms** while it turns negative for the sound ones.

Marginal effects on investments



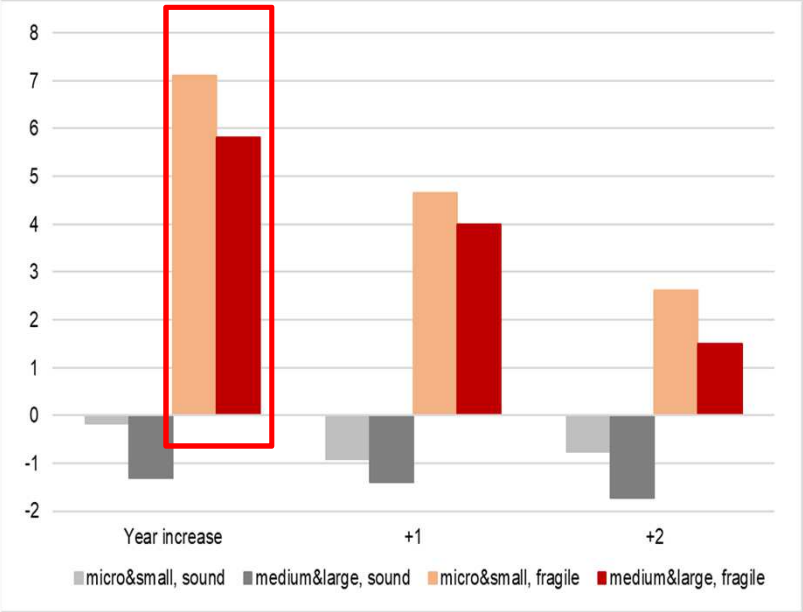
Marginal effects on liquidity



The use of new equity funds: further borrowings or rebalancing

- Firms **simultaneously increase equity and debt** but with differences depending on their riskiness. **Sound firms increase their borrowings** (to finance new investments); their average capitalization remains almost unchanged. **Fragile firms increase their capital ratio** by over 7 and 5 percentage points –for smaller and larger fragile firms respectively– at the end of the year of the recapitalization, relative to other fragile firms.

Marginal effects on capitalization



Equity capital and credit availability:

- We exploit banks' M&As as an exogenous instrument for the change in the firm credit supply; consolidated banks generally reduce credit to the same firm (Bonaccorsi and Gobbi, 2007; Beretta and Del Prete, 2013). Negative credot supply shocks (*d_credit*) reduce the likelihood of capital increases.

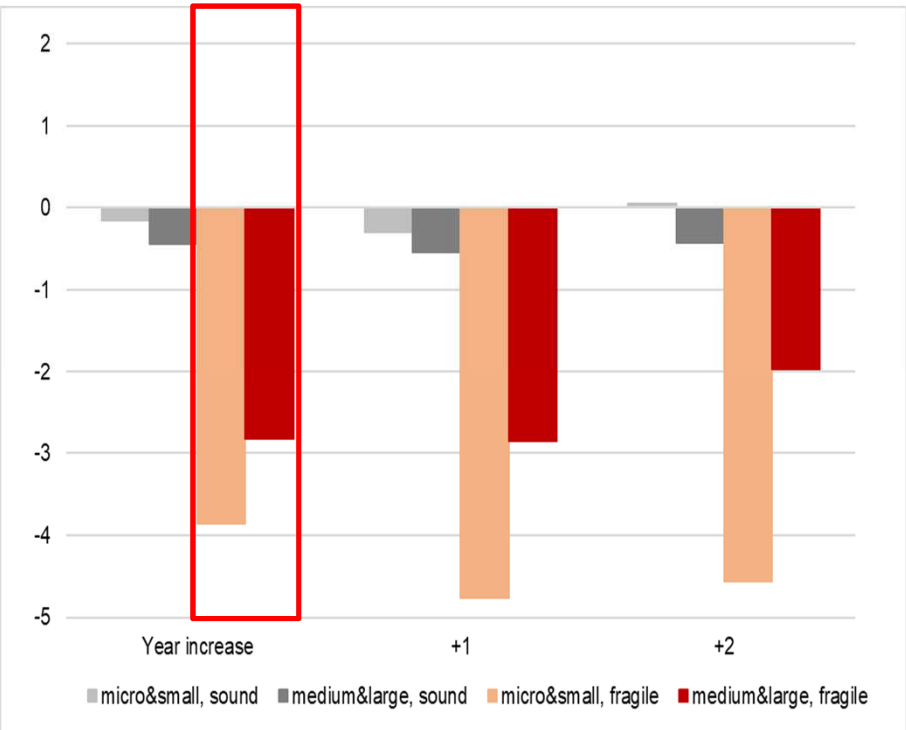
2SLS estimates for the likelihood of a capital increase

	IV - 1st stage (1)	*IV - 2nd stage (2)*
Dependent Var.:	delta credit t_0 - t_{-1}	capital increase $_{T0}$
banks' *M&A* * credit share	-0.0234 *** (0.0044)	
medium-large	0.0023 * (0.0014)	0.0238 *** (0.0010)
fragile	-0.0673 *** (0.0005)	-0.0359 *** (0.0080)
medium-large x fragile	-0.0112 *** (0.0022)	0.0109 *** (0.0020)
d_credit		-0.5563 *** (0.1184)
Fixed-Effects:	----------	----------
province	Yes	Yes
sector	Yes	Yes
year	Yes	Yes
S.E.: Clustered	by: firm	by: firm
Observations	4,628,449	4,628,449

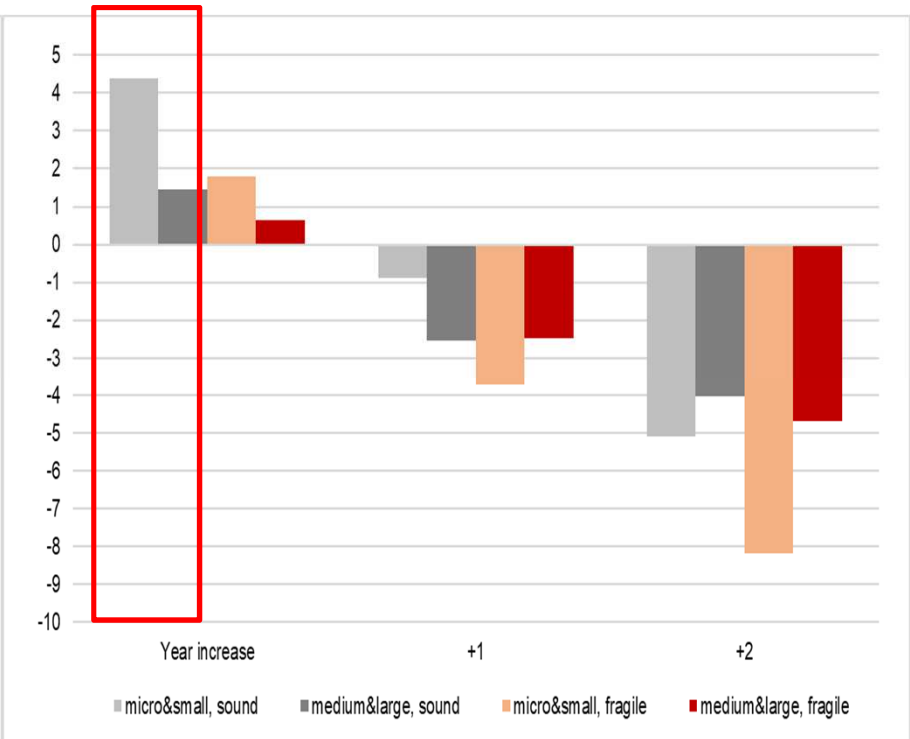
Outcomes of capital increases: market exits and sales growth

- **Fragile firms** reduce their likelihood to **exit the market** (by 4 and 3 p.p. for small and large firms).
- **Sounder firms** display a **stronger business expansion** in the year of the recapitalization.

Marginal effects market exit



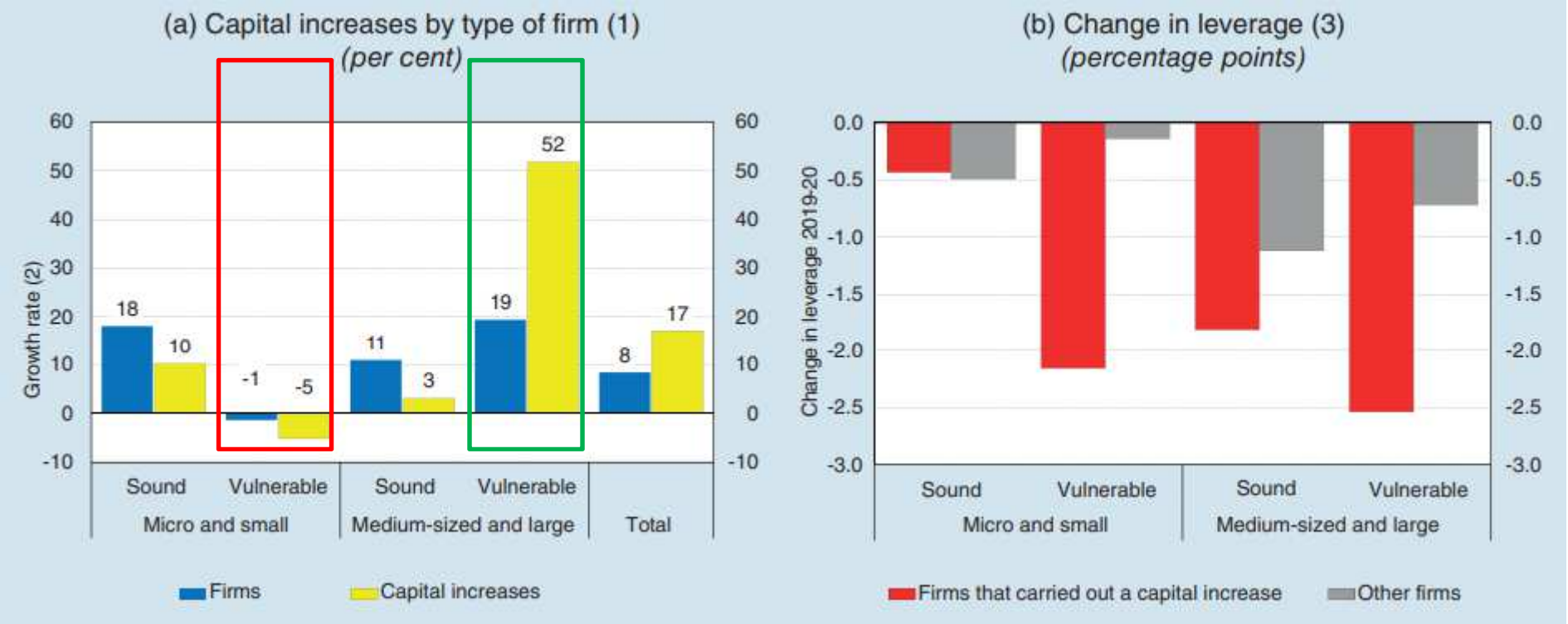
Marginal effect on sales growth



5. Implications and conclusion

Capital increases **during the pandemic crisis** ('20) displayed a **counter-cyclical trend** (w.r.t. the 2017-19 period) both in number and amount of recapitalizations, driven by the large and fragile firms. However, the **take-up** of supporting measure in '*DL Rilancio*' **has been limited**.

Rebalancing the financial structure was the primary motive for the capital increases; the reduction in debt was more intense among vulnerable firms.



5. Implications and conclusion

Insights on the economics of recapitalization **providing guidance** to address concerns resulted from the pandemic (i.e. debt overhang and bankruptcies):

1) as **smaller firms are less likely to recapitalize** with respect to the larger ones (information asymmetries may help explain such market failure) there is a strong case for public support to (more financially constrained) **firms**.

2) **heterogeneity in the use of equity funds** between fragile (debt rebalancing) and sound (investments) firms suggests that:

   i) wide eligibility criteria for public support may simultaneously cushion the effects of the crisis on firms' solvency and accelerate the recovery phase

   ii) if debt overhang issues prevails, policies ought to concentrate on fragile firms.

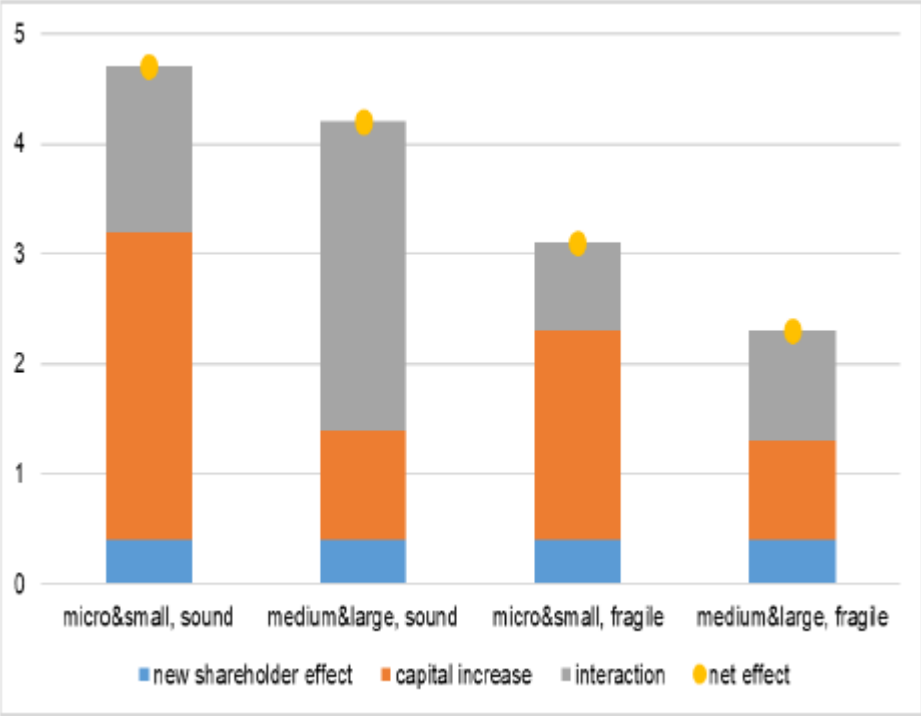
3) There are relevant **interaction to be accounted for** when designing measures to support firms' credit access and equity financing. **Equity financing is a less preferred financing option** w.r.t. bank debt.

Appendix

Outcomes of capital increases: the effect of changes in the shareholders' base

- The effect of a recapitalization combined with the entry of **new shareholders** is associated with larger variations in the investment ratio and in sales growth for all groups.

Δ Investment expenditures



Δ Sales growth