



Research article

COVID-19 and firms' financial health in Brescia: a simulation with Logistic regression and neural networks

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Supplementary

Table A1. Transition Matrices by sector.

ZERO ELASTICITY					TOTAL MANUFACTURING (2,902 firms)					PANEL ELASTICITY							
PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL
A	49.6%	20.4%	20.9%	9.1%	100.0%	A	85.0%	13.3%	1.5%	0.2%	100.0%	A	85.0%	13.3%	1.5%	0.2%	100.0%
B	0.0%	6.5%	36.6%	56.8%	100.0%	B	6.7%	51.0%	39.8%	2.5%	100.0%	B	6.7%	51.0%	39.8%	2.5%	100.0%
C	0.0%	0.0%	12.3%	87.7%	100.0%	C	0.4%	6.3%	61.8%	31.6%	100.0%	C	0.4%	6.3%	61.8%	31.6%	100.0%
D	0.0%	0.0%	0.0%	100.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%
TOTAL	32.6%	14.9%	23.4%	29.1%	100.0%	TOTAL	57.4%	21.2%	16.3%	5.1%	100.0%	TOTAL	57.4%	21.2%	16.3%	5.1%	100.0%
MECHANICS (1,855 firms)																	
PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL
A	49.5%	18.8%	23.1%	8.6%	100.0%	A	81.1%	17.1%	1.7%	0.0%	100.0%	A	81.1%	17.1%	1.7%	0.0%	100.0%
B	0.0%	1.8%	37.9%	60.3%	100.0%	B	1.6%	44.2%	51.9%	2.3%	100.0%	B	1.6%	44.2%	51.9%	2.3%	100.0%
C	0.0%	0.0%	5.0%	95.0%	100.0%	C	0.0%	0.6%	58.6%	40.9%	100.0%	C	0.0%	0.6%	58.6%	40.9%	100.0%
D	0.0%	0.0%	0.0%	100.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%
TOTAL	32.2%	12.7%	24.6%	30.5%	100.0%	TOTAL	53.2%	21.8%	19.2%	5.8%	100.0%	TOTAL	53.2%	21.8%	19.2%	5.8%	100.0%
CHEMICALS, RUBBER & PLASTIC (252 firms)																	
PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL
A	79.7%	18.7%	1.6%	0.0%	100.0%	A	93.4%	6.6%	0.0%	0.0%	100.0%	A	93.4%	6.6%	0.0%	0.0%	100.0%
B	0.0%	41.5%	58.5%	0.0%	100.0%	B	2.4%	95.1%	2.4%	0.0%	100.0%	B	2.4%	95.1%	2.4%	0.0%	100.0%
C	0.0%	0.0%	60.0%	40.0%	100.0%	C	0.0%	0.0%	88.0%	12.0%	100.0%	C	0.0%	0.0%	88.0%	12.0%	100.0%
D	0.0%	0.0%	0.0%	100.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%
TOTAL	57.5%	20.2%	16.7%	5.6%	100.0%	TOTAL	67.9%	20.2%	9.1%	2.8%	100.0%	TOTAL	67.9%	20.2%	9.1%	2.8%	100.0%
METALLURGY (202 firms)																	
PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL
A	38.3%	22.0%	23.4%	16.3%	100.0%	A	97.9%	1.4%	0.7%	0.0%	100.0%	A	97.9%	1.4%	0.7%	0.0%	100.0%
B	0.0%	2.8%	8.3%	88.9%	100.0%	B	33.3%	41.7%	22.2%	2.8%	100.0%	B	33.3%	41.7%	22.2%	2.8%	100.0%
C	0.0%	0.0%	4.5%	95.5%	100.0%	C	0.0%	18.2%	63.6%	18.2%	100.0%	C	0.0%	18.2%	63.6%	18.2%	100.0%
D	0.0%	0.0%	0.0%	100.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%
TOTAL	26.7%	15.8%	18.3%	39.1%	100.0%	TOTAL	74.3%	10.4%	11.4%	4.0%	100.0%	TOTAL	74.3%	10.4%	11.4%	4.0%	100.0%

Table A2. Transition Matrices by sector (continues).

ZERO ELASTICITY					PANEL ELASTICITY						
WOOD & NON METALLIC MINERALS (193 firms)											
PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL
A	19.8%	23.3%	32.8%	24.1%	100.0%	A	91.4%	6.9%	1.7%	0.0%	100.0%
B	0.0%	0.0%	14.3%	85.7%	100.0%	B	14.3%	64.3%	17.9%	3.6%	100.0%
C	0.0%	0.0%	0.0%	100.0%	100.0%	C	0.0%	19.0%	66.7%	14.3%	100.0%
D						D					
TOTAL	11.9%	14.0%	23.8%	50.3%	100.0%	TOTAL	59.1%	24.9%	13.5%	2.6%	100.0%
FOOD & BEVERAGES (140 firms)											
PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL
A	67.0%	31.8%	1.1%	0.0%	100.0%	A	97.7%	2.3%	0.0%	0.0%	100.0%
B	0.0%	47.4%	52.6%	0.0%	100.0%	B	2.6%	86.8%	10.5%	0.0%	100.0%
C	0.0%	0.0%	72.7%	27.3%	100.0%	C	0.0%	0.0%	90.9%	9.1%	100.0%
D	0.0%	0.0%	0.0%	100.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	100.0%
TOTAL	42.1%	32.9%	20.7%	4.3%	100.0%	TOTAL	62.1%	25.0%	10.0%	2.9%	100.0%
TEXTILE & WEARING APPAREL (139 firms)											
PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL
A	32.0%	20.0%	31.0%	17.0%	100.0%	A	70.0%	22.0%	4.0%	4.0%	100.0%
B	0.0%	0.0%	25.0%	75.0%	100.0%	B	7.1%	32.1%	46.4%	14.3%	100.0%
C	0.0%	0.0%	0.0%	100.0%	100.0%	C	0.0%	0.0%	50.0%	50.0%	100.0%
D	0.0%	0.0%	0.0%	100.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	100.0%
TOTAL	23.0%	14.4%	27.3%	35.3%	100.0%	TOTAL	51.8%	22.3%	14.4%	11.5%	100.0%
OTHER MANUFACTURING (121 firms)											
PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL
A	48.6%	31.4%	17.1%	2.9%	100.0%	A	98.6%	1.4%	0.0%	0.0%	100.0%
B	0.0%	0.0%	53.1%	46.9%	100.0%	B	43.8%	50.0%	6.3%	0.0%	100.0%
C	0.0%	0.0%	10.5%	89.5%	100.0%	C	5.3%	47.4%	36.8%	10.5%	100.0%
D						D					
TOTAL	28.1%	18.2%	25.6%	28.1%	100.0%	TOTAL	69.4%	21.5%	7.4%	1.7%	100.0%

Table A3. Transition Matrices by firm size.

		ZERO ELASTICITY				PANEL ELASTICITY																			
		MICRO (830 firms)				SMALL (1,405 firms)				MEDIUM (524 firms)				LARGE (143 firms)											
PRE/POST		A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	
A		48.2%	21.0%	22.3%	8.5%	100.0%	A	82.0%	15.9%	2.1%	0.0%	100.0%	A	88.6%	10.7%	0.5%	0.3%	100.0%	A	96.7%	3.3%	0.0%	0.0%	100.0%	
B		0.0%	2.4%	39.6%	58.0%	100.0%	B	4.8%	45.4%	46.4%	3.4%	100.0%	B	10.9%	64.4%	23.8%	1.0%	100.0%	B	25.0%	62.5%	12.5%	0.0%	100.0%	
C		0.0%	0.0%	15.4%	84.6%	100.0%	C	0.0%	1.6%	65.0%	33.3%	100.0%	C	4.2%	20.8%	58.3%	16.7%	100.0%	C	0.0%	0.0%	100.0%	0.0%	100.0%	
D		0.0%	0.0%	0.0%	100.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	D	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
TOTAL		28.2%	12.9%	25.2%	33.8%	100.0%	TOTAL	49.0%	20.8%	22.4%	7.7%	100.0%	TOTAL	68.9%	21.4%	7.6%	2.1%	100.0%	TOTAL	83.9%	9.8%	4.2%	2.1%	100.0%	
		SMALL (1,405 firms)				MEDIUM (524 firms)				LARGE (143 firms)															
PRE/POST		A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	
A		47.8%	20.5%	21.4%	10.4%	100.0%	A	83.5%	14.4%	1.8%	0.3%	100.0%	A	88.6%	10.7%	0.5%	0.3%	100.0%	A	96.7%	3.3%	0.0%	0.0%	100.0%	
B		0.0%	8.6%	34.9%	56.6%	100.0%	B	5.7%	50.0%	41.7%	2.6%	100.0%	B	10.9%	64.4%	23.8%	1.0%	100.0%	B	25.0%	62.5%	12.5%	0.0%	100.0%	
C		0.0%	0.0%	7.5%	92.5%	100.0%	C	0.0%	8.2%	58.2%	33.6%	100.0%	C	4.2%	20.8%	58.3%	16.7%	100.0%	C	0.0%	0.0%	100.0%	0.0%	100.0%	
D		0.0%	0.0%	0.0%	100.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	D	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
TOTAL		30.9%	15.4%	23.2%	30.6%	100.0%	TOTAL	55.3%	22.6%	17.1%	5.1%	100.0%	TOTAL	68.9%	21.4%	7.6%	2.1%	100.0%	TOTAL	83.9%	9.8%	4.2%	2.1%	100.0%	
PRE/POST		A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	PRE/POST	A	B	C	D	TOTAL	
A		54.1%	17.5%	21.1%	7.4%	100.0%	A	88.6%	10.7%	0.5%	0.3%	100.0%	A	96.7%	3.3%	0.0%	0.0%	100.0%	A	96.7%	3.3%	0.0%	0.0%	100.0%	
B		0.0%	6.9%	37.6%	55.4%	100.0%	B	10.9%	64.4%	23.8%	1.0%	100.0%	B	25.0%	62.5%	12.5%	0.0%	100.0%	B	25.0%	62.5%	12.5%	0.0%	100.0%	
C		0.0%	0.0%	20.8%	79.2%	100.0%	C	4.2%	20.8%	58.3%	16.7%	100.0%	C	4.2%	20.8%	58.3%	16.7%	100.0%	C	0.0%	0.0%	100.0%	0.0%	100.0%	
D		0.0%	0.0%	0.0%	100.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	D	0.0%	0.0%	0.0%	100.0%	D	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
TOTAL		40.6%	14.5%	24.0%	20.8%	100.0%	TOTAL	68.9%	21.4%	7.6%	2.1%	100.0%	TOTAL	83.9%	9.8%	4.2%	2.1%	100.0%	TOTAL	83.9%	9.8%	4.2%	2.1%	100.0%	



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