

Micro-entrepreneurs' financial and digital competences during the pandemic in Italy

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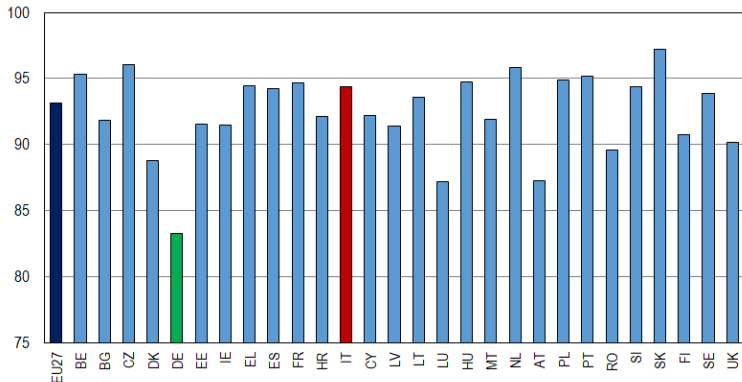
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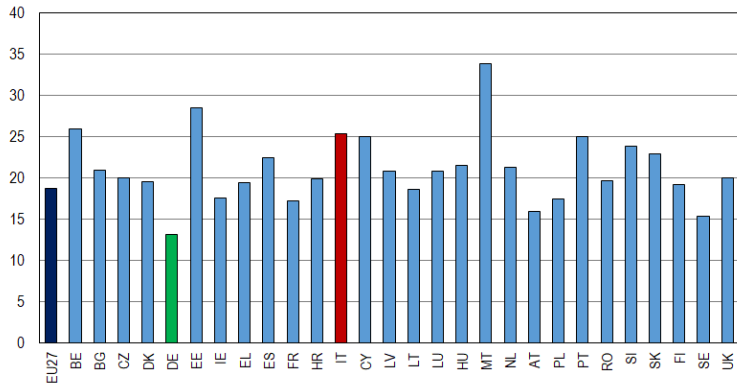
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- Motivation & research questions
- The data
- Italian micro-firms' financial literacy and digital competences
- The role of financial literacy to foster digitalization
- The role of financial literacy in helping firms to face the pandemic crisis
- Additional and future research (the quest for causality)

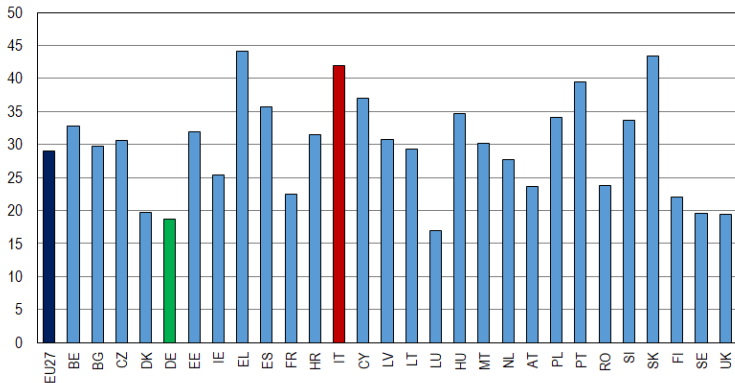
Micro-enterprises (less than 10 employees): share of enterprises



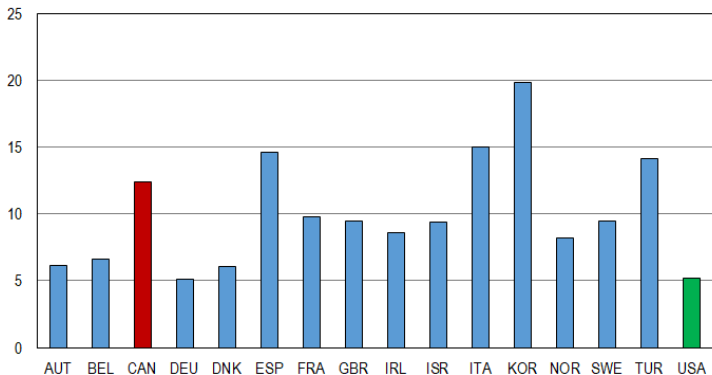
Micro-enterprises (less than 10 employees): share of value added



Micro-enterprises (less than 10 employees): share of employees



Share of employees in micro-enterprises in 2015 (manufacturing only)



Financial, digital competences and micro-firms

- Financial and digital skills have increasingly turned into critical factors for business of all sizes
- For micro-entrepreneurs these competences may even be key to the survival of their business (especially after unexpected shocks)
- Despite the importance of the topic, little evidence is available about micro-firms (mainly due to the low data availability for such firms); most of the available analyses are based on case studies, small samples, self-reported measures of financial literacy

Financial, digital competences and micro-firms (cont.)

- On average, **financial literacy** improves managerial financial practices, firm profitability, firm capability to access external finance (Bruhn and Zia, 2011; Siekei et al, 2013; Dahmen and Rodriguez, 2014; Drexler et al., 2014; Eniola and Entbang, 2017; Alperovych et al, 2020; Atandi, 2021; Hussain et al, 2018)
- Access to **digital technologies** improves micro-firm performance; the capability to adopt ICT is highly heterogeneous across firms
- Financial literacy and digital skills affects entrepreneurial entry too and not just firm performance (Oggero et al, 2019)

- ① Describes the level of financial literacy and digital competences of micro-firms in a developed country, such as Italy (for the first time)
- ② Investigates the role of financial literacy as a driver for digitalization during the pandemic
- ③ Investigates the role of financial literacy when firms have to face unexpected shocks, such as that caused by the pandemic

- About 2,000 non financial firms with less than 10 employees. The survey was part of a larger initiative promoted by the G20 Italy Presidency 2021. It was undertaken in collaboration with OECD/INFE and involved nine G20 (Brazil, China, France, Germany, Italy, Mexico, Russia, Saudi Arabia and Turkey) and five non-G20 members (Georgia, the Netherlands, Peru, Portugal, Spain).
- Specific section of the questionnaire focuses on the impact of the Covid-19 pandemic

The data: measuring financial literacy

- In line with the existing OECD/INFE (2018) definition, financial literacy is measured as a combination of financial knowledge, attitudes and behaviors
- In particular,
 - The financial knowledge (FK) score is computed as the number of correct responses to 5 financial knowledge questions
 - The financial behavior (FB) score is computed as the number of “financially savvy” behaviors, assessed using 9 questions
 - The financial attitudes (FA) score is computed as the number of “financially savvy” attitudes, assessed using 3 questions

The data: measuring financial literacy (cont.)

Question number	Label
QK7_1	Dividends are part of what a business pays to a bank to repay a loan
QK7_2	When a company obtains equity from an investor it gives the investor part of the ownership of the company
QK7_3	If a financial investment offers the chance to make a lot of money it is likely that there is also a chance to lose a lot of money
QK7_4	High inflation means that the cost of living is increasing rapidly
QK7_5	A 15-year loan typically requires higher monthly payments than a 30-year loan, but the total interest paid over the life of the loan will be less

F. Knowledge (5)

Question number	Label
QK2_1	I set long term financial goals for the business and strive to achieve them
QK2_2	I am confident to approach banks and external investors to obtain business finance
QK2_4	I prefer to follow my instinct rather than to make detailed financial plans for my business

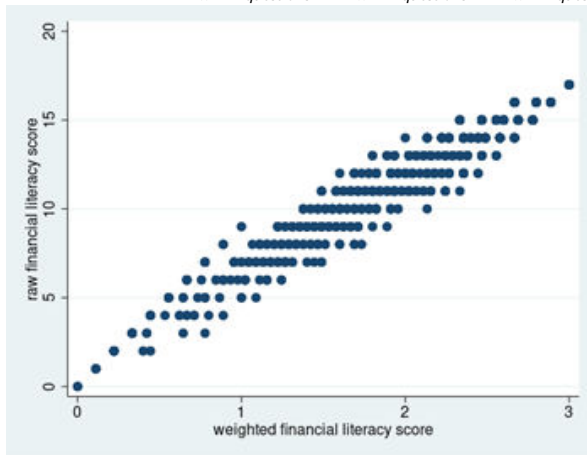
F. Attitudes (3)

Question number	Label
QP2	Separation account
QP5	Shopping around
QM3	Keeping track of financial records
QM4	Thought about retirement
QM6	Strategies to cope with theft
QM7_1	I keep secure data and information about the business
QM7_2	I compare the cost of different sources of finance for the business
QM7_3	I forecast the profitability of the business regularly
QM7_4	I adjust my planning according to the changes in economic factors

F. Behaviour (9)

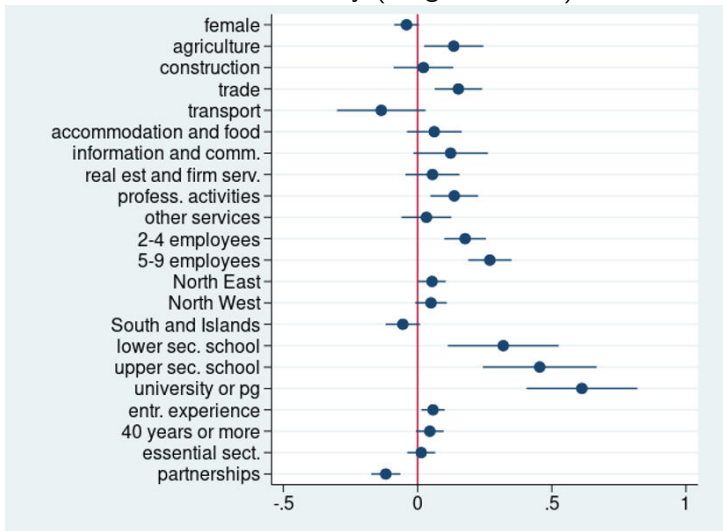
The data: measuring financial literacy (cont.)

$$FL_{\text{weighted-score}} = \frac{FK_{\text{score}}}{\#FK_{\text{questions}}} + \frac{FB_{\text{score}}}{\#FB_{\text{questions}}} + \frac{FA_{\text{score}}}{\#FA_{\text{questions}}}$$



Financial literacy and firm characteristics (cont.)

Financial literacy (weighted score)

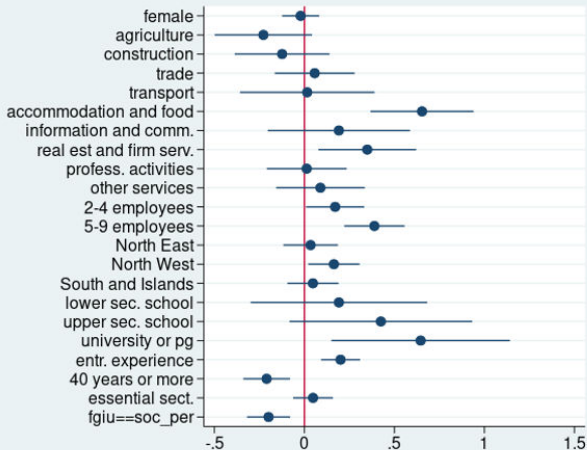


The data: measuring digitalization

- We consider the following digital activities
 - opening a bank account completely online
 - signing a financing contract (e.g. a bank loan) completely online
 - signing an insurance contract completely online
 - having a dedicated website to showcase the products or services of the business
 - having a dedicated website to sell the products or services of the business.
- We devise two alternative proxies of digitalization measured in the pre-pandemic situation:
 - a digital score, ranging from 0 to 5, displaying to the number of digital activities performed by the firms before the pandemic
 - a binary indicator of digitalization, equal to one for firms with a digitalization score above the median, and zero otherwise

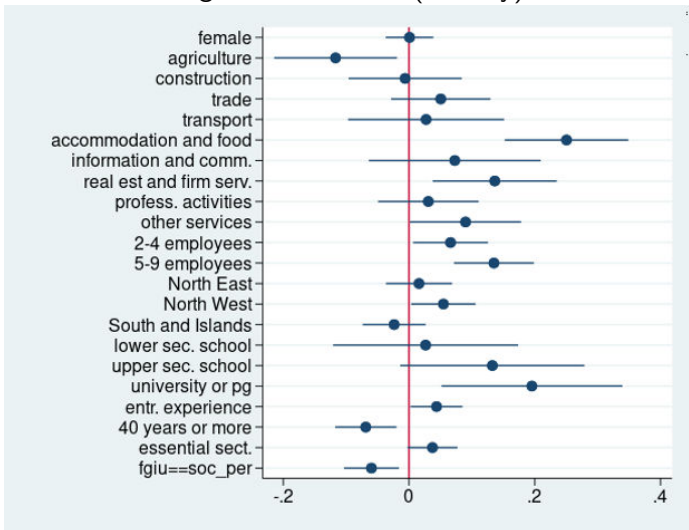
The data: measuring digitalization (cont.)

Digitalization score (0-5)



The data: measuring digitalization (cont.)

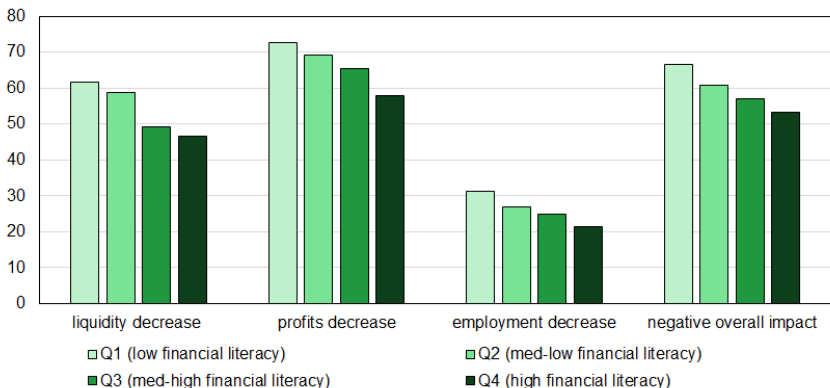
Digitalization score (dummy)



- ① Relationship between financial literacy and firm digitalization during the pandemic
- ② Relationship between financial literacy and firm ability to cope with the pandemic shock

Financial literacy & the consequences of the pandemic

Share of firms that experienced a decrease of liquidity, profits, employment and an overall negative impact of the pandemic (%)



Financial literacy & the consequences of the pandemic (cont.)

- We estimate the correlation between FL and the impact of the shock on several outcomes, controlling for firm characteristics:

$$Y_i = \alpha + \beta FL_i + X_{ik}\gamma + P_{ik}\delta + \epsilon_i$$

where Y is a dummy equal to 1 if profits (liquidity, number of employees) decreased during the pandemic and 0 otherwise

Financial literacy & the consequences of the pandemic (cont.)

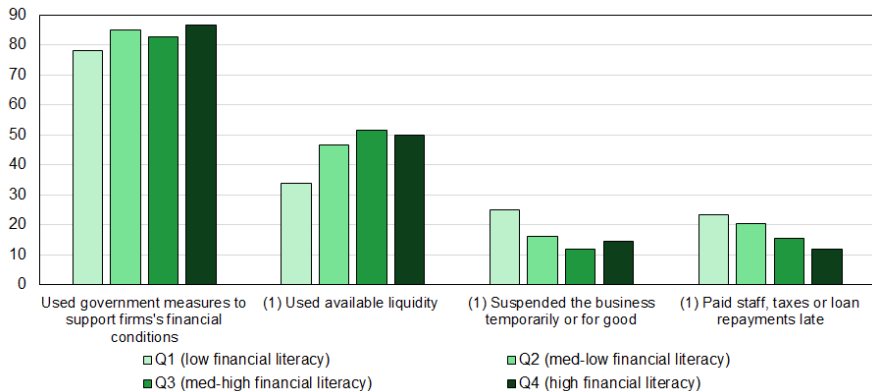
VARIABLES	Profits decrease during the pandemic	Liquidity decrease during the pandemic	Number of employees decrease during the pandemic	Overall negative impact of the pandemic
FL score	-0.0570*** (0.0184)	-0.0652*** (0.0206)	-0.0282 (0.0189)	-0.0465** (0.0201)
2-4 employees	0.0373 (0.0342)	-0.00471 (0.0397)	-0.0234 (0.0350)	0.0330 (0.0352)
5-9 employees	-0.0306 (0.0350)	-0.0748* (0.0418)	-0.126*** (0.0349)	-0.0311 (0.0364)
lower secondary school	0.0566 (0.0910)	0.0539 (0.103)	0.0387 (0.0984)	0.0282 (0.0888)
upper secondary school	0.0289 (0.0888)	0.0122 (0.0975)	-0.00220 (0.0954)	-0.0180 (0.0842)
university level educ or more	-0.0298 (0.0905)	-0.00482 (0.100)	-0.0266 (0.0961)	-0.0559 (0.0880)
experience	-0.0144 (0.0239)	-0.0184 (0.0239)	-0.0161 (0.0227)	-0.0158 (0.0242)
female	0.0107 (0.0242)	0.0113 (0.0272)	-0.0135 (0.0216)	-0.0127 (0.0260)
age	0.0381 (0.0290)	0.0458 (0.0304)	-0.0195 (0.0266)	0.0182 (0.0288)
essential sectors	-0.144*** (0.0236)	-0.0957*** (0.0238)	-0.0938*** (0.0212)	-0.157*** (0.0251)
sectors (10) area (4)	yes	yes	yes	yes
Constant	0.855*** (0.110)	0.706*** (0.124)	0.493*** (0.118)	0.815*** (0.112)
Observations	1998	1998	1998	1998
R-squared	0.086	0.072	0.124	0.093

Financial literacy & the consequences of the pandemic: channels

- We investigate some possible channels behind the previous results:
- On a theoretical ground, firms with larger financial competences should have a more balanced financial and cost structures. Arguably these factors could have played a role in building their ex-ante resiliency to the crisis.
- Secondly, more financially literate firms might have more easily obtained emergency external finance, or accessed aid measures devised by the national government.

Financial literacy & the consequences of the pandemic: channels (cont.)

Share of firms that used government measures to support firms' financial conditions and strategies put in place by firms facing a liquidity shortage (%)



Financial literacy & the consequences of the pandemic: channels (cont.)

VARIABLES	Used government measures during the pandemic	Used available liquidity to cover cash needs during the pandemic	Paid staff, taxes or loan repayments late to cover cash needs during the pandemic	Suspended the business temporarily or for good to cover cash needs during the pandemic
FL score	0.0484*** (0.0163)	0.127*** (0.0279)	-0.0663*** (0.0246)	-0.0841*** (0.0257)
2-4 employees	0.0940*** (0.0336)	0.00400 (0.0511)	0.0243 (0.0454)	-0.0352 (0.0409)
5-9 employees	0.0960*** (0.0346)	0.0117 (0.0532)	0.0118 (0.0431)	-0.0296 (0.0412)
lower secondary school	0.214** (0.0946)	0.0230 (0.126)	-0.0708 (0.124)	0.115 (0.0792)
upper secondary school	0.240*** (0.0928)	0.109 (0.121)	-0.138 (0.115)	0.149* (0.0774)
university level educ or more	0.207** (0.0946)	0.105 (0.122)	-0.148 (0.119)	0.122 (0.0790)
experience	0.0520*** (0.0180)	-0.00438 (0.0392)	0.0172 (0.0298)	-0.0449 (0.0280)
female	0.0363** (0.0174)	-0.0199 (0.0351)	-0.0206 (0.0270)	-0.0155 (0.0214)
age over 40 years	-0.0130 (0.0242)	0.0611 (0.0403)	-0.0503 (0.0367)	0.0711*** (0.0317)
essential sectors	-0.0581*** (0.0172)	-0.0172 (0.0382)	0.0353 (0.0258)	-0.0416 (0.0314)
partnerships	-0.0314 (0.0195)	0.0401 (0.0402)	-0.0932*** (0.0271)	-0.0592** (0.0287)
sectors (10) area (4)	yes	yes	yes	yes
Constant	0.327*** (0.112)	0.0543 (0.142)	0.419*** (0.137)	0.285** (0.109)
Observations	1998	967	967	967
R-squared	0.062	0.038	0.054	0.073

The quest for causality (work in progress)

- We reach identification by means of instrumental variable.
Sources of exogeneity:
- Shock on supply of financial services
 - positive effect of financial experience on financial literacy (Frijns et al., 2014); own financial literacy influenced by that of peers or reference groups (Bucher-Koenen and Lusardi, 2011; Fornero and Monticone, 2011; Jappelli and Padula, 2013; Klapper et al., 2013; Klapper and Panos, 2011; van Rooij et al., 2011)
- Closeness to economics faculties

- Given the relevance of micro-firms, the empowerment of their financial competences contribute to economic growth, financial stability
- We exploit a new survey, allowing for the first time to investigate financial and digital skills of Italian micro-entrepreneurs
- We investigate whether these skills helped the micro-firms to deal with the pandemic shock; we find a significant correlation between microentrepreneurs FL and firm resilience during the pandemic
- We highlight a positive relationship between financial literacy and the transition to more digitalized business activities

Thank you!

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Financial literacy & digitalization during the pandemic

- On a theoretical ground, the role of financial literacy in fostering digitalization is largely associated to the increasing expansion of digital financial services and products (DFS) (see Lyons and Kass-Hanna, 2021). Indeed, greater financial competencies allow entrepreneurs to evaluate (and take advantage of) the opportunities offered by DFS; greater usage of DFS requires, in turn, larger investments in digitalization.
- We estimate the following

$$Y_i = \alpha + \beta FL_i + X_{ik}\gamma + P_{ik}\delta + \epsilon_i$$

where Y is a dummy equal to 1 if the firm increased its involvement in digital activities during the pandemic and 0 otherwise

Financial literacy & digitalization during the pandemic

VARIABLES	Digital switch during the pandemic (overall)	Digital switch during the pandemic (financial)	Digital switch during the pandemic (commercial)
FL score	0.0280** (0.0140)	0.0205* (0.0116)	0.0158 (0.0114)
2-4 empl	0.0360 (0.0270)	0.0159 (0.0242)	0.0370* (0.0222)
5-9 empl	0.0163 (0.0278)	-0.00168 (0.0242)	0.0214 (0.0239)
lower secondary school	0.0601 (0.0650)	0.0518 (0.0469)	-0.0193 (0.0626)
upper secondary school	0.0576 (0.0628)	0.0636 (0.0456)	-0.0281 (0.0605)
university level educ or more	0.0631 (0.0638)	0.0589 (0.0469)	-0.00964 (0.0616)
experience	-0.0186 (0.0220)	-0.0108 (0.0193)	-0.0107 (0.0179)
female	-0.00623 (0.0213)	-0.00168 (0.0174)	0.00723 (0.0189)
age	-0.0438* (0.0265)	-0.0150 (0.0225)	-0.0413* (0.0228)
essential sectors	-0.00123 (0.0218)	-0.0121 (0.0171)	0.00713 (0.0173)
partnerships	-0.0382** (0.0191)	-0.0104 (0.0162)	-0.0508*** (0.0170)
sectors (10) & area (4)	yes	yes	yes
Constant	0.129 (0.0837)	0.0112 (0.0607)	0.172** (0.0761)
Observations	1794	1842	1503
R-squared	0.025	0.021	0.030

Financial literacy & digitalization during the pandemic (robustness)

Two (alternative) robustness exercises

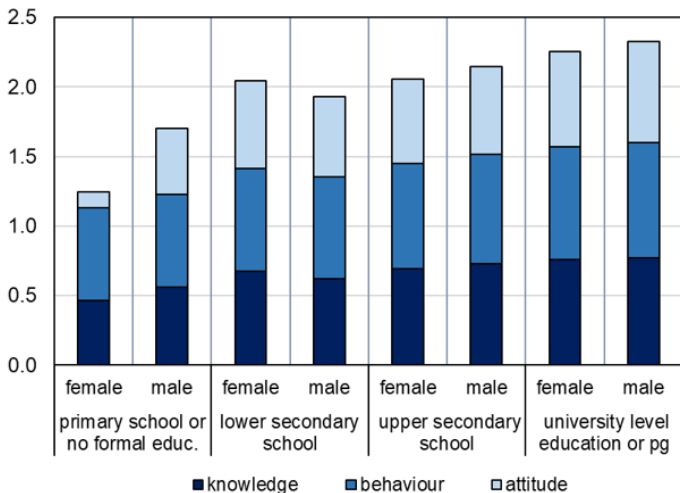
- ① We devise a digitalization score given by the difference between the number of digital activities that the firm engaged in during the pandemic and the number of activities she engaged in before
- ② We focus on those firms that did not engage in any digital activity before the pandemic; we devise a dependent variable taking value 1 if during the pandemic the firm engaged in at least one digital activity and 0 otherwise

Financial literacy & digitalization during the pandemic (robustness)

VARIABLES	digitalization during the pandemic (1)	digitalization during the pandemic (financial digital activities only) (1)	digitalization during the pandemic (commercial digital activities only) (1)	digital switch during the pandemic (2)	digital switch during the pandemic (financial digital activities only) (2)	digital switch during the pandemic (commercial digital activities only) (2)
FL_score	0.0505* (0.0258)	0.0364** (0.0163)	0.0142 (0.0150)	0.0464** (0.0213)	0.0222 (0.0148)	0.0263* (0.0142)
2-4 employees	0.0778 (0.0508)	0.0219 (0.0339)	0.059* (0.0319)	0.0295 (0.0430)	0.0120 (0.0325)	0.0302 (0.0240)
5-9 employees	0.0429 (0.0510)	0.00618 (0.0349)	0.0347 (0.0328)	0.0120 (0.0456)	-0.0142 (0.0322)	0.0567** (0.0287)
lower secondary school	0.0830 (0.149)	0.0526 (0.0468)	0.0304 (0.117)	-0.0187 (0.108)	0.0454 (0.0683)	-0.0687 (0.0840)
upper secondary school	0.0699 (0.146)	0.0703 (0.0455)	-0.000355 (0.114)	-0.0307 (0.105)	0.0125 (0.0688)	-0.0606 (0.0821)
university level educ or more	0.0543 (0.147)	0.0630 (0.0483)	0.00130 (0.114)	-0.0259 (0.109)	-0.00691 (0.0657)	-0.0647 (0.0836)
experience (10 yrs at least)	-0.0433 (0.0326)	-0.0269 (0.0242)	-0.0164 (0.0220)	-0.0476 (0.0355)	-0.0218 (0.0214)	-0.0319 (0.0235)
female	0.00594 (0.0347)	-0.00896 (0.0229)	0.0149 (0.0215)	-0.00855 (0.0334)	-0.0202 (0.0186)	0.00956 (0.0235)
age over 40 years	-0.0733* (0.0418)	0.000720 (0.0317)	-0.0741*** (0.0251)	-0.0351 (0.0485)	-0.0260 (0.0283)	-0.0372 (0.0303)
essential sectors	-0.0503 (0.0347)	-0.0502** (0.0239)	0.00586 (0.0220)	0.0508 (0.0381)	-0.0144 (0.0215)	0.0199 (0.0255)
partnerships	-0.0568** (0.0333)	-0.00797 (0.0224)	-0.0508*** (0.0229)	-0.0578* (0.0321)	0.0145 (0.0201)	-0.0550*** (0.0233)
sectors (10 area (4)	yes yes	yes yes	yes yes	yes yes	yes yes	yes yes
Constant	0.197 (0.166)	0.0319 (0.0760)	0.165 (0.130)	0.0807 (0.147)	0.0479 (0.0814)	0.134 (0.0976)
Observations	1998	1998	1998	480	884	911
R-squared	0.022	0.017	0.021	0.059	0.031	0.041

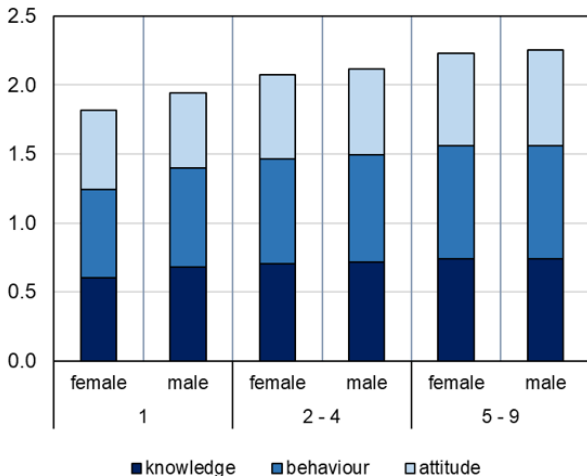
Financial literacy and firm characteristics

Financial literacy by level of education and gender



Financial literacy and firm characteristics (cont.)

Financial literacy by firm size and gender



Financial literacy and firm characteristics (cont.)

Financial literacy by sector of economic activity

