Financial Literacy of MSMEs Owners and Access to Credit

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General Motivation

■ **Financial Literacy of entrepreneurs (OECD definition):**

"The combination of **awareness, knowledge, skills, attitudes and behavior** that a potential entrepreneur or an owner or manager of a micro, small or medium sized enterprise should have in order to **make effective financial decisions** to start a business, run a business, and ultimately **ensure its sustainability and growth**"

■ Higher Financial Literacy (FL) → better access to financing sources

■ In this paper: access to bank credit

Research Questions

- **FL and credit demand: discouraged borrowers**

- **FL and the likelihood to obtain credit (conditional on demand)**

Enhancing Factors (mediators):

- FL and professional advice

- FL and knowledge of public guarantees during COVID-19 pandemics

■ **Discouraged Borrowers (Kon and Storey, 2003)**

☐ Represent **twice the population of rejected loans** in the UK (Freel et al., 2012)

☐ They are more likely to be **less educated, younger, women, less optimistic** (Anastasiou et al., 2022; Barasal and Morales, 2022)

☐ Own firms with **worse credit quality,** and **more risky** (Cole et al., 2016; Han et al., 2009)

■ The degree of FL as one of the entrepreneur's personal characteristics that can affect being a discouraged borrower (DB)

■ **Hypothesis 1: firm owner's degree of FL positively affects the firm's credit demand │firm needs credit**

- **Entrepreneurs with higher FL are better able to relate with bank(s)**

☐ **Better financial reporting** (Mutezo, 2013)

☐ **Improved business plans, financial strategy** (Kim, 2019)

☐ Better understanding of asymmetries of information, bank's credit criteria

- **Hypothesis 2: firm owner's degree of FL positively affects the probability of obtaining the requested loan │credit is demanded**

Hypothesis Developement and Related Literature: Advice

1. Professional Advice

- ☐ **Lower (psychological) application costs** → less DB

- ☐ **Better assessment of likelihood to obtain credit** → less DB

- ☐ **Higher quality of credit applications** → higher approval rate

- ☐ **FL and demand for advice (households): complements or substitutes** (Stolper and Walter, 2017)

  - ☐ Arguments for complementarity in the case of entrepreneurs

■ Hypothesis 3:

- ☐ **Firm owner's degree of FL positively affects demand for professional advice**
- ☐ **This in turn increases credit demand and credit approval**

2. Awareness of Public Guarantees (PG) on loans during COVID-19

☐ **April 2020: guarantees against risk of default** for loans of small amount (<25.000€):

    ☐ Extended almost automatically

    ☐ Full coverage of the guarantee → zero percent risk weighting → lower bank's regulatory capital

→ PG increased credit supply and therefore credit demand

■ **Entrepreneurs' FL positively correlates with awareness** of these guarantees (D'Ignazio et al., 2022)

■ **Hypothesis 4:**

☐ **Firm owner's degree of FL positively affects his/her awareness of PG**

☐ **This in turn increases credit demand and credit approval**

- Survey (March-May 2021) to Italian companies < 10 employees: 1,998 micro-entrepreneurs

- Our sample = 1,586 observations (due to missing values)

- We consider sampling weights to ensure representativeness of the sample (population = 3,552,066 Italian SMEs)

- **Dependent Variables**

  ☐ **Credit Demand │firm needs external financing**

  ☐ **Loan approval │credit has been demanded**

- Total 1,586 observations

☐ Loan **Needed** = 1,119 (**71.15%**)

☐ On 1,119 firms in need for financing

  ☐ Loan Asked (yes) = 953 (85.17%)

  ☐ Loan Asked (no) = 166 **Discouraged Borrowers** (≈15%)

☐ On 953 firms asking for credit

  ☐ Loan granted = 854 (89.61%)

  ☐ 105 firms are **credit rationed (≈10%)**

- Two Probit models with Heckman (1979) sample selection

■ Probit model (1)

☐ **First stage**: **Loan Needed**

☐ **Second stage**: **Loan Asked**

☐ Exclusion restriction: **Covid Impact on the number of firms' employees**

   ☐ Correlates (+) with firm performance, and (-) with financial needs, hence need for loans; it affects demand for a loan only through its effect on financing needs

■ Probit model (2)

☐ **First stage: Loan Asked**

☐ **Second stage: Loan Granted**

☐ Exclusion restriction: **Pre-COVID Digital Loan** (=sign a loan completely online)

   ☐ Explains demand (not being discouraged); it affects the probability of loan approval only through its effect on loan demand

Independent Variables: FL

■ Three measures of FL:

1. OECD three "pillars" (Knowledge, Behavior Attitude) with equal weights **(FinLiteracy)**

☐ **Knowledge:** 5 Qs (dividends, equity, risk-return, inflation, loan payment)

☐ **Behavior:** 8 Qs

☐ **Attitude:** 3 Qs (we exclude one related to attitude towards banks)

2. Financial Knowledge (FinKnowledge)

☐ Only the 5 Qs in OECD Knowledge

3. FinKnowledge extended

☐ **FinKnowledge + additional 6 Qs** (credit rating, "Big Three", balance sheet, ROA)

- ## Advice

  ☐ Focus on **external, professional advice** (e. g. accountant, business fin. advisor, fin. intermediary)

- ## Awareness of PG

  ☐ Used the guarantees or they did not use them because they **were not aware**

- ## Controls

  ☐ Respondent characteristics

  ☐ Self-reported firm financial situation (liquidity, leverage)

  ☐ Other firm characteristics (sales, industry, macro-region, age)

Descriptive Statistics

	Full sample		Needed a loan		Asked for a loan		Were granted a loan	
	N	%	N	% of full sample	N	% of needed a loan	N	% of asked for a loan
Total	**1586**	100.00	**1119**	70.55	**953**	85.17	**854**	89.61
By age of the respondent								
<30 years	48	3.03	36	75.00	31	86.11	26	83.87
30-49 years	716	45.15	507	70.81	445	87.77	395	88.76
50-69 years	746	47.04	522	69.97	435	83.33	395	90.80
>=70 years	76	4.79	51	67.11	42	82.35	38	90.48
By education level of respondent								
Primary education or less	16	1.01	12	75.00	8	66.67	7	87.50
Middle school	180	11.35	145	80.56	115	79.31	102	88.70
High school	898	56.62	647	72.05	556	85.94	503	90.47
Tertiary education	492	**31.02**	315	64.02	274	86.98	242	88.32
By gender of respondent								
Male	1146	**72.26**	803	70.07	682	84.93	615	90.18
Female	440	**27.74**	316	71.82	271	85.76	239	88.19
By annual sales of the company in 2020								
<10,000 EUR	15	0.95	12	80.00	7	58.33	5	71.43
10,000- 50,000 EUR	78	4.92	52	66.67	32	61.54	26	81.25
50,000- 100,000 EUR	181	**11.41**	141	77.90	116	82.27	101	87.07
100,000- 500,000 EUR	833	**52.52**	590	70.83	510	86.44	463	90.78
500,000 - 1,000,000 EUR	280	**17.65**	191	68.21	173	90.58	151	87.28
1,000,000- 2,000,000 EUR	126	7.94	84	66.67	71	84.52	68	95.77
>2,000,000 EUR	73	4.60	49	67.12	44	89.80	40	90.91

Descriptive Statistics: Financial Literacy

	N	Mean	SD
All companies	1586	75.674	17.106
Company did not need a loan	467	76.914	15.852
Company needed a loan	1119	75.156	17.584
Company needed a loan but did not ask for it	166	68.878	19.169
Company needed a loan and asked for it	953	76.250	17.069
Company asked for a loan which was not granted	99	77.138	15.898
Company asked for a loan which was granted	854	76.147	17.205

Dep. Var: Need for external financing

	I	II	III
Male	-0.032	-0.031	-0.028
	(0.097)	(0.096)	(0.096)
ln(FirmAge)	-0.001	-0.005	-0.007
	(0.040)	(0.040)	(0.040)
High_liquidity	**-0.695***	**-0.689***	**-0.687***
	(0.092)	(0.091)	(0.091)
Low_ST_debt	-0.234	-0.230	-0.225
	(0.158)	(0.156)	(0.157)
Low_LT_debt	**-0.493***	**-0.493***	**-0.494***
	(0.143)	(0.142)	(0.142)
FinLiteracy	0.002		
	(0.002)		
FinKnowledge		-0.001	
		(0.001)	
FinKnowledge_extended			-0.002
			(0.002)
N of observations	1586	1586	1586
Population size	3,552,066	3,552,066	3,552,066
F	11.585***	10.938***	11.165***

Demand for Bank Financing – conditional on needing it

	I	II	III
Dep Var: LoanAsked			
Male	-0.069	-0.065	-0.084
	(0.106)	(0.103)	(0.104)
ln(FirmAge)	0.040	0.035	0.040
	(0.063)	(0.062)	(0.062)
High_liquidity	0.077	0.085	0.069
	(0.242)	(0.247)	(0.295)
Low_ST_debt	0.033	0.039	0.018
	(0.158)	(0.153)	(0.156)
Low_LT_debt	-0.248	-0.260	-0.270
	(0.178)	(0.176)	(0.186)
FinLiteracy	**0.009 *****		
	(0.003)		
FinKnowledge		**0.004****	
		(0.002)	
FinKnowledge_extended			**0.007*****
			(0.003)
Dep Var: LoanNeeded			
CovidImpact_empl	**-0.237*****	**-0.237*****	**-0.238*****
	(0.063)	(0.063)	(0.063)
FinLiteracy	0.002		
	(0.002)		
FinKnowledge		-0.001	
		(0.001)	
FinKnowledge_extended			-0.001
			(0.002)
athrho	0.271	0.316	0.397
	(0.610)	(0.622)	(0.753)
N	1,586	1,586	1,586
N_selected	1,119	1,119	1,119
N_nonselected	467	467	467
Population size	3,552,066	3,552,066	3,552,066
F	2.465**	1.915*	2.187**

■ Average Marginal Effect of an increase by one SD:

☐ In FinLit = +3.6%

☐ In FinKnowledge = +2.4%

☐ In FinKnowledge Extended = +4.36%

in the probability of asking for a bank loan, conditional on needing external financing

■ These effects are all significantly different from zero → do not reject Hyp. 1

Credit Approval – conditional on being demanded

	I	II	III	IV	V	VI
Dep Var: LoanGranted						
Male	0.175	0.176	0.177	0.177	0.176	0.178
	(0.132)	(0.142)	(0.131)	(0.141)	(0.132)	(0.141)
ln(FirmAge)	0.320***	0.328***	0.319***	0.328***	0.319***	0.328***
	(0.089)	(0.089)	(0.089)	(0.086)	(0.089)	(0.087)
High_liquidity	0.264**	0.264	0.259**	0.260*	0.258**	0.256
	(0.129)	(0.159)	(0.130)	(0.154)	(0.130)	(0.155)
Low_ST_debt	0.125	0.115	0.114	0.105	0.121	0.112
	(0.180)	(0.176)	(0.181)	(0.178)	(0.180)	(0.175)
Low_LT_debt	0.319*	0.323*	0.333**	0.332*	0.328*	0.330*
	(0.172)	(0.168)	(0.168)	(0.168)	(0.168)	(0.168)
FinLiteracy	-0.003	-0.004				
	(0.005)	(0.004)				
FinKnowledge			-0.001	-0.001		
			(0.003)	(0.002)		
FinKnowledge_extended					-0.001	-0.002
					(0.004)	(0.003)
Dep Var: LoanAsked						
PreDgt_loan	0.458***	0.465**	0.469***	0.476**	0.470***	0.479**
	(0.141)	(0.194)	(0.139)	(0.195)	(0.141)	(0.198)
FinLiteracy	0.010***	0.009***				
	(0.003)	(0.003)				
FinKnowledge			0.005**	0.005***		
			(0.002)	(0.002)		
FinKnowledge_extended					0.009***	0.008***
					(0.002)	(0.002)
athrho	0.181	-0.051	0.131	-0.034	0.172	-0.023
	(0.725)	(0.709)	(0.662)	(0.527)	(0.637)	(0.520)
N	1,119	1,119	1,119	1,119	1,119	1,119
N_selected	953		953		953	
N_nonselected	166		166		166	
Population size	2,536,379	2,536,379	2,536,379	2,536,379	2,536,379	2,536,379
F		2.348**		2.38**		2.386**

Dep. Var: demand for external, professional advice

	I	II	III
Male	-0.084	-0.082	-0.090
	(0.066)	(0.066)	(0.065)
ln(FirmAge)	0.020	0.010	0.012
	(0.069)	(0.067)	(0.067)
High_liquidity	0.026	0.043	0.042
	(0.055)	(0.052)	(0.052)
Low_ST_debt	-0.087	-0.076	-0.089
	(0.125)	(0.127)	(0.128)
Low_LT_debt	-0.130	-0.135	-0.132
	(0.128)	(0.127)	(0.129)
FinLiteracy	**0.008 *****		
	(0.002)		
FinKnowledge		0.002	
		(0.002)	
FinKnowledge_extended			0.004*
			(0.002)
N	1,586	1,586	1,586
Population size	3,552,066	3,552,066	3,552,066
F	12.996***	13.041***	12.09***

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Enhancing Mechanisms: Demand for External Advice

	I	II	II
Dep Var: LoanAsked			
ExternalAdvice	**0.436*****	**0.471*****	**0.456*****
	(0.108)	(0.108)	(0.104)
FinLiteracy	**0.008****		
	(0.003)		
FinKnowledge		**0.004****	
		(0.002)	
FinKnowledge_extended			**0.007****
			(0.003)
Dep Var: LoanNeeded			
CovidImpact_empl	-0.238***	-0.238***	-0.239***
	(0.065)	(0.064)	(0.064)
ExternalAdvice	**0.201****	**0.206****	**0.209****
	(0.095)	(0.094)	(0.095)
FinLiteracy	0.002		
	(0.002)		
FinKnowledge		-0.001	
		(0.001)	
FinKnowledge_extended			-0.002
			(0.002)
athrho	0.261	0.311	0.423
	(0.759)	(0.797)	(1.006)
N	1,586	1,586	1,586
N_selected	1,119	1,119	1,119
N_nonselected	467	467	467
Population size	3,552,066	3,552,066	3,552,066
F	3.595***	3.6***	4.171***

■ Average Marginal Effect of an increase by one SD:

☐ In FinLit = +2.97% (it was +3.6% not including advice)

☐ In FinKnowledge = +2.28% (it was +2.4% not including advice)

☐ In FinKnowledge Extended = +3.9% (it was +4.36% not including advice)

in the probability of asking for a bank loan, conditional on needing external financing

■ All effects significantly different from zero → seeking external advice only partially mediates the (+) relationship between FL and credit demand

Enhancing Mechanisms: Awareness of Public Guarantees on Loans

Dep. Var: Awareness of Public Guarantees

	II	IV	VI
Male	0.305*	0.298*	0.276*
	(0.161)	(0.156)	(0.156)
ln(FirmAge)	0.045	0.035	0.030
	(0.090)	(0.088)	(0.089)
High_liquidity	0.068	0.089	0.080
	(0.165)	(0.161)	(0.165)
Low_ST_debt	0.260	0.250	0.228
	(0.201)	(0.193)	(0.195)
Low_LT_debt	0.231	0.217	0.218
	(0.160)	(0.157)	(0.159)
FinLiteracy	**0.011***		
	(0.004)		
FinKnowledge		0.004	
		(0.003)	
FinKnowledge_extended			**0.010***
			(0.003)
N	1252	1252	1252
Population size	2,595,251	2,595,251	2,595,251
F	4.956***	2.466**	2.559**

Enhancing Mechanisms: Awareness of Public Guarantees on Loans

	I	II	III
Dep Var: LoanAsked			
AwareLoanGuarantees	0.579**	0.605**	0.521*
	(0.276)	(0.274)	(0.297)
FinLiteracy	0.007*		
	(0.004)		
FinKnowledge		0.004*	
		(0.002)	
FinKnowledge_extended			**0.007****
			(0.003)
Dep Var: LoanNeeded			
CovidImpact_empl	**-0.265*****	**-0.265*****	**-0.262*****
	(0.076)	(0.076)	(0.075)
AwareLoanGuarantees	-0.125	-0.118	-0.108
	(0.237)	(0.235)	(0.236)
FinLiteracy	0.001		
	(0.002)		
FinKnowledge		-0.001	
		(0.002)	
FinKnowledge_extended			-0.002
			(0.002)
athrho	0.569	0.586	0.851
	(0.560)	(0.546)	(0.814)
N	1,252	1,252	1,252
N_selected	913	913	913
N_nonselected	339	339	339
Population size	2,595,251	2,595,251	2,595,251
F	3.135***	2.332**	2.791**

- Average Marginal Effect of an increase of one SD:

In Fin Lit produces an effect on Pr(ASK|NEED) not significantly different from zero

In FinKnowledge = +1.98 % (it was +2.4% not including awareness of PG)

In FinKnowledge Extended = +3.38 % (it was +4.36% not including awareness of PG)

in the probability of asking for a bank loan, conditional on needing bank credit

- Being aware of PG partially mediates the (+) relationship between FL and credit demand

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- By using a 2021 survey on 1,998 Italian micro-entrepreneur we investigate whether **higher firm owner's FL**

☐ Reduces the probability of failing to apply for bank loans because of the fear to be rejected

☐ Improves the probability of obtaining the requested credit

☐ Two possible enhancing mechanisms: demand for professional advice and awareness of PG related to COVID-19 pandemics

- **Higher FL → less discouraged to borrow, if in need**

- **The probability of credit approval does not correlate significantly with the firm owner's FL**

- **Both mechanisms help explaining the positive relationship FL – credit demand**

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Thank you!