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Who participates in the credit market during the COVID-19 pandemic? Evidence from the Consumer Expectations Survey

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Contribution and Main Findings

- The paper contributes to the literature in 3 main ways:
 - It offers new evidence what drives consumers' demand for credit applications.
 - It provides new insights into what determines the probability of the consumer credit being accepted by financial institutions.
 - It empirically investigates whether and to what extent the COVID-19 pandemic impacts on consumers' borrowing behaviour.
- Main findings
 - ✓ age, income, financial literacy, liquidity constraints and degree of urbanization significantly impact on both the application and the acceptance of credit.
 - ✓ the probability for credit application and credit approval vary across countries.
 - ✓ heterogeneity in the type of credit and in particular for secured versus unsecured loans.



Related Literature

- The paper relates to:
 - a number of studies that focus on the the drivers of the observed consumer behaviour and the determinants of the effective credit market participation; see, for example, Agarwal et al. (2006), Campbell (2006), Gabaix and Laibson (2006), Lusardi and Tufano (2009), Meier and Sprenger (2010) and Disney and Gathergood (2013).
 - a wide range of studies that examine the impact of credit constraints in consumer finance; see, Zeldes (1989), Jappelli (1990), Jappelli *et al.* (1998), Gross and Souleles (2002), Leth-Petersen (2010) and Crossley and Low (2014), among others.
 - the debate about the incidence of borrowing constraints and whether the low borrowing in some groups of the population is due to the low demand for loans or to the denial of credit; see, for example, Grant (2007)



Methodological Approach

- Two well-established methodologies in the literature:
 - The first approach argues that the presence of credit constraints is inferred from violations of the assumptions of the life-cycle/permanent-income hypothesis. This methodology uses household consumption and income data to look for a significant dependence (or “*excess sensitivity*”) of consumption on transitory income, considered as an indication of borrowing or liquidity constraints. → *Besley (1995) and Browning and Lusardi (1996), among others*
 - The second approach directly uses information on consumers’ participation and their experiences in the credit market to classify them as credit constrained or not. The classification is then used in reduced form regression equations to analyse the determinants of a household being credit constrained. → *Jappelli (1990), among others*
- ✓ *The paper uses the second approach.*

Empirical Design

Our main econometric approach is a binary probit model to estimate:

- the probability of a household to **apply for a loan**

$$P(\text{Apply}_{h,c}=1 | a_c, X_{h,c}) = \Phi(a_c + \beta X_{h,c}) \quad (1)$$

- the probability of a household's **credit application to be accepted**.

$$P(\text{Approval_full}_{h,c}=1 | a_c, X_{h,c}) = \Phi(a_c + \beta X_{h,c}) \quad (2)$$

where:

$\text{Apply}_{h,c}$ is the binary outcome variable, i.e., whether the household has applied for a loan during the last 3 months

$\text{Approval_full}_{h,c}$ is the binary outcome variable, i.e., whether the household's credit application has been fully accepted

Φ is the cumulative distribution function of a standard normal distribution

a_c is a vector of country-level fixed effects

β is the slope for household level demographics and socio-economic variables that is common across countries.

Time fixed effects are also included in the regressions.



Data & Sample

- ✓ Novel data from the Consumer Expectations Survey (CES): a new online high-frequency and fully harmonized survey measuring consumer expectations and behaviour in Germany, France, Italy, Spain, Belgium and the Netherlands.
- ✓ One of the strong features of CES is its panel dimension → assessment of how consumer behaviour changes over time and how consumers respond to critical (economic) shocks.
- ✓ In this paper we use quarterly data, from April 2020 to January 2022 → investigate in depth the consumer borrowing behaviour throughout the COVID-19 pandemic.
- ✓ The dataset consists of 22,462 households and 90,900 observations



Dependent Variables

- 1. Applied for credit** → sum of the respondents who applied and (i) had their application approved; (ii) had their application rejected; and (iii) do not yet know the outcome of their application.
- 2. Credit being accepted** → respondents who applied for credit and had their amount granted in full

Descriptive Statistics



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VARIABLE	Mean	Min	Max	STD	N. Obs.	N. HHs
Credit application						
rate	0.150	0	1	0.357	84394	22462
Credit acceptance rate	0.703	0	1	0.457	8628	5431
Age 18-34 years	0.240	0	1	0.427	90900	26634
Age 35-50 years	0.339	0	1	0.474	90900	26634
Age 50-55 years	0.136	0	1	0.343	90900	26634
Age 56-60 years	0.100	0	1	0.300	90900	26634
Age 61-65 years	0.089	0	1	0.284	90900	26634
Age over 65 years	0.096	0	1	0.294	90900	26634
Female	0.507	0	1	0.500	90850	26614
Higher education	0.546	0	1	0.498	90900	26634
Number of children	0.706	0	3	0.928	90900	26634
Net income quintiles	2.972	1	5	1.408	90403	25943
Unemployed	0.091	0	1	0.288	90900	26634
Low risk	0.486	0	1	0.500	89279	26161
Medium risk	0.227	0	1	0.419	89279	26161
High risk	0.287	0	1	0.452	89279	26161
Mortgage holders	0.299	0	1	0.458	90900	26634
Financial concerns	6.010	0	10	2.736	89729	23633
Credit access harder						
than 12 months ago	0.291	0	1	0.454	88676	23407
Insufficient liquidity	0.292	0	1	0.455	90895	23779
Financial literacy	2.421	0	4	1.130	90900	26634
Degree of						
urbanization	3.186	1	5	1.435	69035	12324
Home ownership	0.650	0	1	0.477	90900	26634
At least 1 past late						
payment	0.109	0	1	0.312	85243	22484



What determines credit applications?

- ✓ *The probability to apply for credit is monotonically decreasing with age.*
- ✓ *Females are less likely to apply for credit*
- ✓ *Households with high level of education are more likely to apply for credit*

VARIABLES	(1) Marg. Effects	(2) Marg. Effects
Age 18-34	0.107*** (0.009)	0.089*** (0.010)
Age 35-49	0.049*** (0.008)	0.048*** (0.009)
Age 50-55	0.028*** (0.009)	0.026** (0.010)
Age 56-60	0.022** (0.009)	0.015 (0.010)
Age 61-65	0.018* (0.009)	0.018* (0.010)
Age over 65 = 0	-	-
Female	-0.036*** (0.005)	-0.029*** (0.005)
High education	0.019*** (0.005)	0.018*** (0.005)



What determines credit applications?...

✓ *Households with low level of income and risk and high number of children have higher probability to apply for a loan.*

✓ *Unemployed households and households with mortgage loan, and financial concerns due to Covid-19 are more likely to apply for credit.*

VARIABLES	(1)	(2)
	Marg. Effects	Marg. Effects
Number of children (censored)	0.015*** (0.004)	0.013*** (0.005)
1st income quintile	-0.042*** (0.008)	-0.047*** (0.009)
2nd income quintile	-0.025*** (0.008)	-0.029*** (0.009)
3rd income quintile	-0.007 (0.008)	-0.006 (0.009)
4th income quintile	-0.005 (0.007)	-0.008 (0.008)
Unemployed	0.047*** (0.008)	0.046*** (0.010)
Risk averse	-0.013** (0.006)	-0.007 (0.006)
Risk neutral	-0.018*** (0.006)	-0.016** (0.007)
Outstanding mortgage	0.041*** (0.005)	0.040*** (0.006)
Financial concerns	0.005*** (0.001)	0.004*** (0.001)

What determines credit applications?

- ✓ *Households with hard credit access in the past 12 months, insufficient liquidity are more likely to apply for a loan.*
- ✓ *We find a negative effect of financial literacy on the probability of credit applications. However, we find that this is attributed to consumers that are not subject to liquidity constraints.*
- ✓ *Compared to rural areas, households living in large cities, suburban areas and medium-size towns are more likely to apply for credit.*

VARIABLES	(1) Marg. Effects	(2) Marg. Effects
Credit harder than 12 months earlier	0.054*** (0.005)	0.054*** (0.006)
Insufficient liquidity	0.032*** (0.006)	0.034*** (0.007)
Financial literacy	-0.015*** (0.002)	-0.013*** (0.003)
Big city (residence)		0.022*** (0.008)
Suburb of big city (residence)		0.044*** (0.009)
Mid-size city (residence)		0.039*** (0.009)
Small city (residence)		0.002 (0.007)
Rural area (residence) = 0		



Country Marginal Effects: Credit Applications

	(1)	(2)
Country Dummies	Marg. Effects	Marg. Effects
Belgium	-0.041*** (0.008)	-0.041*** (0.009)
Spain	-0.025*** (0.007)	-0.030*** (0.008)
France	-0.035*** (0.006)	-0.034*** (0.007)
Italy	-0.007 (0.007)	-0.005 (0.008)
Netherlands	-0.048*** (0.008)	-0.052*** (0.009)

✓ In all countries but Italy, the probability to apply for credit is significantly lower than in Germany.

What determines the credit acceptance?

- ✓ *Age is jointly significant at 1%.*
- ✓ *The age function is concave. Middle-aged households have the highest probability to get their credit application approved compared to the oldest consumers.*
- ✓ *Youngest households exhibit the highest negative marginal effects.*
- ✓ *Gender and the level of education do not affect the probability of household's loan application being accepted.*

VARIABLES	(1)	(2)	(3)
	Marg. Effects	Marg. Effects	Marg. Effects
Age 18-34	-0.108*** (0.035)	-0.088** (0.035)	-0.081** (0.041)
Age 35-49	-0.040 (0.034)	-0.036 (0.034)	-0.014 (0.040)
Age 50-55	0.040 (0.036)	0.036 (0.037)	0.055 (0.042)
Age 56-60	-0.034 (0.041)	-0.017 (0.040)	-0.005 (0.048)
Age 61-65	-0.046 (0.040)	-0.034 (0.040)	-0.020 (0.046)
Age over 65 = 0,	-	-	-

What determines the credit acceptance?...

- ✓ *Households belonging to any of the lower income quintiles are less likely to get credit approval.*
- ✓ *Being unemployed reduces the probability of obtaining credit. The marginal effect is strong, 26 and 21 percentage points.*
- ✓ *Risk averse households are more likely to get approval for their loans.*

	(1)	(2)	(3)
VARIABLES	Marg. Effects	Marg. Effects	Marg. Effects
1st income quintile	-0.105*** (0.028)	-0.080*** (0.028)	-0.062* (0.034)
2nd income quintile	-0.080*** (0.026)	-0.060** (0.025)	-0.043 (0.031)
3rd income quintile	-0.023 (0.023)	-0.012 (0.023)	0.015 (0.027)
4th income quintile	-0.052** (0.024)	-0.051** (0.024)	-0.031 (0.028)
Unemployed	-0.262*** (0.025)	-0.213*** (0.026)	-0.210*** (0.031)
Risk averse	0.035* (0.019)	0.036** (0.018)	0.037* (0.022)
Risk neutral	0.025 (0.021)	0.006 (0.021)	-0.004 (0.025)

What determines the credit acceptance?



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- ✓ *Home ownership and financial literacy are positively associated with the probability of credit approval.*
- ✓ *Households with at least 1 missed payment in the past 12 months are less likely to obtain credit.*
- ✓ *Risk averse households are more likely to get approval for their loans.*
- ✓ *Living in sub-urban and medium-sized towns significantly reduces credit approvals.*

	(1)	(2)	(3)
VARIABLES	Marg. Effects	Marg. Effects	Marg. Effects
Home ownership	0.041** (0.017)	0.032* (0.017)	0.024 (0.020)
Financial literacy	0.067*** (0.007)	0.047*** (0.008)	0.052*** (0.009)
At least 1 late payment		-0.264*** (0.020)	-0.250*** (0.025)
Big city (residence)			-0.051* (0.029)
Suburb of big city (residence)			-0.162*** (0.031)
Mid-size city (residence)			-0.103*** (0.027)
Small city (residence)			-0.037 (0.025)
Rural area (residence) = 0,			-

Country Marginal Effects: Credit Approval



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	(1)	(2)	(3)
Country Dummies	Marg. Effects	Marg. Effects	Marg. Effects
Belgium	0.060** (0.031)	0.068** (0.030)	0.086** (0.036)
Spain	0.079*** (0.025)	0.061** (0.025)	0.076*** (0.030)
France	0.095*** (0.023)	0.057** (0.023)	0.064** (0.027)
Italy	0.133*** (0.023)	0.135*** (0.022)	0.141*** (0.027)
Netherlands	0.006 (0.035)	0.021 (0.035)	0.045 (0.047)

✓ In Spain, France, Italy and Belgium the probability to get credit approval is significantly higher than in Germany.

Credit Applications: Secured vs Unsecured ?



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✓ *The probability to apply for credit is decreasing with age for both secured and unsecured loans.*

✓ *Females are less likely to apply for credit.*

✓ *Higher educated consumers are more likely to apply for secured and unsecured loans.*

VARIABLES	(1)	(2)
	Secured	Unsecured
Age 18-34	0.045*** (0.006)	0.037*** (0.008)
Age 35-49	0.021*** (0.005)	0.017** (0.007)
Age 50-55	0.007 (0.005)	0.012 (0.008)
Age 56-60	0.002 (0.005)	0.008 (0.008)
Age 61-65	-0.001 (0.005)	0.012 (0.009)
Female	-0.011*** (0.003)	-0.015*** (0.004)
High education	0.011*** (0.003)	0.008** (0.004)



Credit Applications: Secured vs Unsecured ?

- ✓ *Number of children is positively associated with the probability to apply for both secured and unsecured loans.*
- ✓ *The probability of applying for credit decreases in the lowest income quintile.*
- ✓ *Being unemployed is positively associated with the probability of applying for unsecured loans but not for secured loans.*

VARIABLES	(1)	(2)
	Secured	Unsecured
Number of children	0.006** (0.003)	0.008** (0.003)
1st income quintile	-0.014*** (0.005)	-0.014** (0.006)
2nd income quintile	-0.014*** (0.005)	-0.009 (0.006)
3rd income quintile	-0.006 (0.005)	0.006 (0.007)
4th income quintile	-0.004 (0.005)	-0.005 (0.006)
Unemployed	-0.002 (0.005)	0.022*** (0.006)
Risk averse	-0.001 (0.003)	0.000 (0.005)
Risk neutral	-0.000	-0.009*

Credit Applications: Secured vs Unsecured ?



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VARIABLES	(1)	(2)
	Secured	Unsecured
Outstanding mortgage	0.029*** (0.004)	0.013*** (0.004)
Financial concerns	0.001 (0.000)	0.003*** (0.001)
Credit harder than 12 months earlier	0.025*** (0.004)	0.022*** (0.004)
Insufficient liquidity = 1	0.003 (0.003)	0.038*** (0.005)
Financial literacy = 1	-0.003** (0.001)	-0.006*** (0.002)
Big city (residence)	0.010** (0.004)	0.012** (0.006)
Suburb of big city (residence)	0.015*** (0.005)	0.017*** (0.006)
Mid-size city (residence)	0.016*** (0.005)	0.018*** (0.006)
Small city (residence)	0.001 (0.004)	-0.002 (0.005)

✓ *Households with mortgage and hard credit access are more likely to apply for a loan for secured and unsecured loans whereas financial literacy has a negative effect on the probability to apply for both loans.*

✓ *Financial concerns due to Covid-19 and liquidity constraints matter for unsecured but not for secured credit applications.*

✓ *Households in big / mid-sized cities and suburban areas are more likely to apply for both types of credit.*



Credit Applications: Single Type Credit

- High level of education is positively associated with the probability to apply for a mortgage loan and a credit card or an account with an overdraft facility with a financial institution.
- Unemployed consumers and consumers with low level of income are less likely to apply for a mortgage loan.
- The number of children is significantly (at the 1-percent level) increasing the probability to apply for a credit card or an account with an overdraft facility with a financial institution.
- Middle-income consumers are significantly more likely to apply for consumer credit.



Conclusions

- This paper analyses the household participation in the credit market in the Euro area at the onset of the COVID-19 pandemic using data from the CES
- We provide evidence that the probability to apply for credit:
 - (-) age, female, level of income, financial literacy
 - (+) level of education, number of children, unemployed, low level of risk, financial concerns due to Covid-19hard credit access in the past 12 months, liquidity constrained and large/medium cities and suburban areas
- We provide evidence that the probability for credit approval:
 - (-) younger consumers, low-income quintiles, missed payments in the past 12 months large/medium cities and suburban areas
 - (+) financial literacy
- Both the probability to apply for credit and credit approval vary across the big six euro area economies.