Knowing What Not to Do: Financial Literacy And Consumer Credit Choices

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Data on Overdraft Credit

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H_0: Financial Literacy Influences Credit Decisions

How do Financial Literacy and Self-Control Interact?

What matters for consumers' credit decisions?

▸ The life-cycle theory and the permanent income hypothesis tell us that

    ▸ individuals will rationally smooth their consumption

    ▸ according to age and expected income

▸ However, observed behavior deviates systematically from the rational choice model. Is this…

    ▸ because people are myopic and prefer immediate gratification over long-term benefits and/or

    ▸ because people are financially illiterate and rationally unable to understand when a level of debt is unsustainable?

▸ Our analysis: Does financial literacy play a role in credit decisions when consumers lack self-control/are impulsive?

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Summary

Results at a glance

The results provide evidence that:

▶ People with low self-control are more likely to use overdraft frequently, especially if they are financially illiterate.

▶ Being financially literate decreases the probability of people with low self-control to rely heavily on overdraft credit by around 20 percent (up to 6 percentage points).

▶ It is mainly advanced financial literacy (i.e. knowledge on financial products and markets) – opposed to numeracy like financial literacy – which affects the probability to use overdraft credit less often.

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Consumers' credit decisions and self-control

▶ **Consumers are found to behave according to a theory of planner vs. doer**

  ▶ **Shefrin, Thaler (1988) explicitly consider self-control issues in their "Behavioral Life-Cycle Hypothesis".**

  ▶ A long-horizon planner has to exert willpower over a short-sighted doer who wants to consume right away.

▶ Empirical evidence

  ▶ Ottaviani, Vandone (2011): Impulsive people take out more consumer credit.

  ▶ Meier, Sprenger (2010): Present-biased individuals accrue more credit card debt.

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Empirical research provides evidence that financially illiterate households...

▸ take out loans with unfavorable credit conditions (Lusardi, Tufano 2009).

▸ exhibit higher delinquency rates (Gathergood 2012).

▸ Take out subprime mortgages more frequently (Geradi, Goette, and Meier 2010).

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The SAVE 2009 Dataset

- ▶ Micro data on 2,222 German households provided by MEA (Munich Center for the Economics of Aging)

- ▶ Contains information on demographic characteristics (age, family structure, occupation) and economic items (income, net wealth)

- ▶ Our focus: Credit lines on current accounts
    - ▶ Available to 80% of German households
    - ▶ Accessible through debit or delayed debit cards, withdrawals or bank transfers
    - ▶ Easy contract conditions
    - ▶ Used in everyday life without professional consultation

How can we measure financial literacy?

▶ **Financial literacy is measured by a 9 items subset of the questions by van Rooij, Lusardi, Alessie (2011).**

▶ Financial literacy gauges "the ability to perform basic calculations as well as familiarity with financial products and concepts".

▶ Examples:

    ▶ Suppose you had €100 in a savings account and the interest rate was 2% per year. After 5 years, how how much do you thik would have in the account if you left the money to grow? (i) *More than* €102; (ii) Exactly €102; (iii) Less than €102; (iv) Do not know.

    ▶ Buying a company stock mutually provides a safer return than a stock mutual fund. True or false? (i) True; (ii) *False*; (iii) Do not know.

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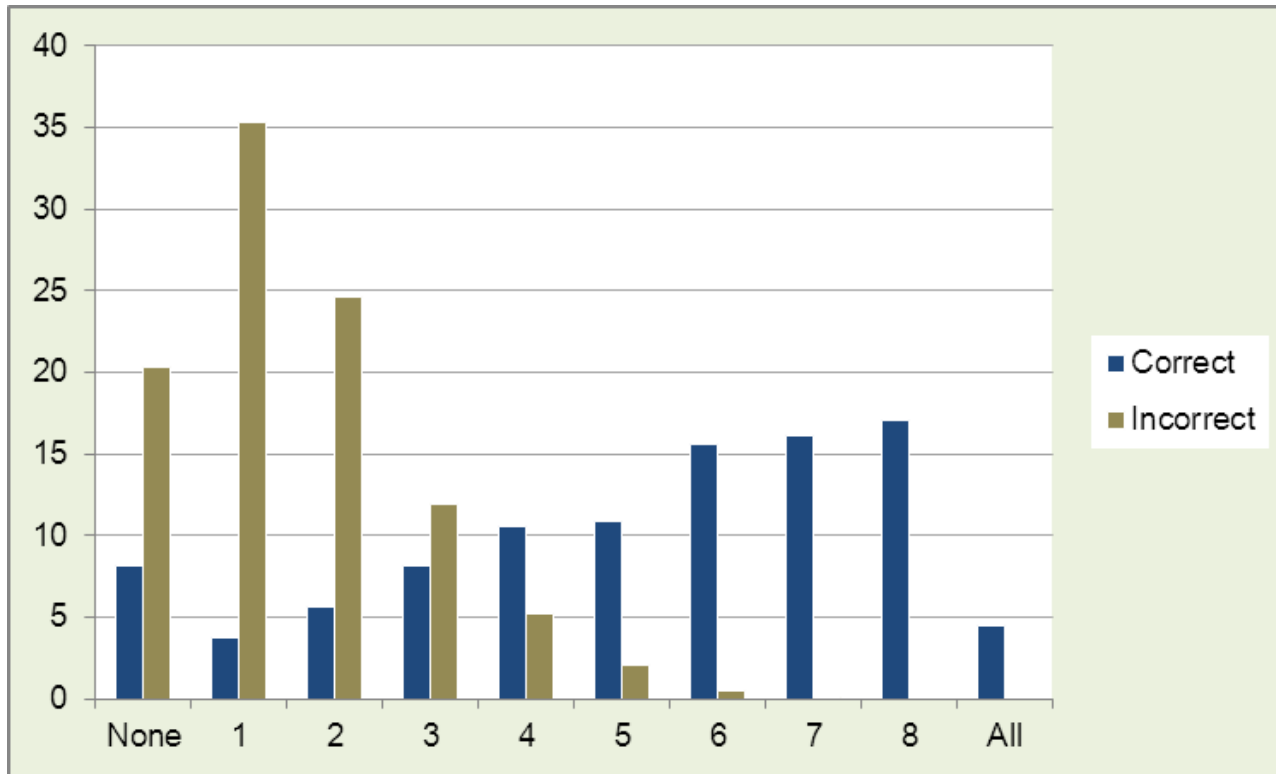
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  - Buying a company stock usually provides a safer return than a stock mutual fund. True or false? (i) True; (ii) *False*; (iii) Do not know.

Measuring Financial Literacy & Self-Control

Results on the financial literacy test

Graph: Distribution of number of correct and incorrect answers

Measuring Financial Literacy & Self-Control

How can we assess self-control?

▶ **Self-control is approximated in a 3 items test. (Frederick's (2005) cognitive reflection test.)**

▶ Test measures the "tendency to override an intuitive response which is incorrect and to engage in further reflection".

▶ Example:
A bat and a ball cost 110 cents in total. The bat costs 100 cents more than the ball. How much does the ball cost? – Price of the ball: _ _ _ cents (please fill in)

▶ Approach: Counting the intuitive but incorrect answers.

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Results on the cognitive reflection test

Table: Percentage of correct, intuitive & incorrect and other
incorrect answers

	Correct	Intuitive	Incorrect	Refusal
1) Bat and ball	19.4	66.7	3.1	10.8
2) Production time	40.3	32.1	11.8	15.8
3) Lily pond	42.6	33.3	6.3	17.8

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Measuring Financial Literacy & Self-Control

Correlation between the proxies

Table: Pearson correlations for self-control and financial literacy

	TF	Full FL	Basic FL	Adv. FL	Economic Eduction
TF score	1				
Full FL score	-0.34	1			
Basic FL score	-0.31	0.91	1		
Advanced FL score	-0.27	0.85	0.56	1	
Economics education	-0.05	0.16	0.18	0.1	1

Distribution of Overdraft Credit Usage Frequency (conditional on access)

Table: "How often do you use the overdraft line on your current account?"

	Frequency	Percent
never	811	46.8
1-3 times p.a.	438	25.3
4-6 times p.a.	152	8.8
more often or constantly	295	17.0

H$_0$: Financial Literacy Influences Credit Decisions

Basic model

$$Creditfreq_i^* = \beta FinLit_i + \gamma' \phi_i + \varepsilon_i$$

▶ We regress the categorial variable *Creditfreq* indicating overdraft usage frequency on the explanatory variables and controls.

▶ As explanatory variable we consider FinLit counting the correct answers to the financial literacy test.

▶ We include several sets of control variables in φ concering

     ▶ Economic situation, household structure, occupational situation, education

▶ Econometric approach: Ordered probit model

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H₀: Financial Literacy Influences Credit Decisions

Table: Ordered probit regression of overdraft usage frequency on financial literacy indicators

	(i)	(ii)	(iii)	(iv)	(v)
Financial literacy		-0.239*** (0.069)	-0.241*** (0.071)		
basic literacy				-0.092 (0.068)	-0.100 (0.068)
advanced literacy				-0.186*** (0.071)	-0.187*** (0.072)
2nd wealth quartile	-0.458*** (0.098)	-0.454*** (0.098)	-0.452*** (0.098)	-0.450*** (0.098)	-0.447*** (0.098)
3rd wealth quartile	-0.348*** (0.094)	-0.325*** (0.094)	-0.319*** (0.095)	-0.319*** (0.095)	-0.312*** (0.095)
4th wealth quartile	-0.724*** (0.101)	-0.683*** (0.101)	-0.682*** (0.102)	-0.680*** (0.102)	-0.678*** (0.102)
Log income	-0.079 (0.072)	-0.035 (0.072)	-0.042 (0.073)	-0.034 (0.072)	-0.039 (0.072)
Age	0.064*** (0.018)	0.061*** (0.018)	0.061*** (0.018)	0.061*** (0.018)	0.061*** (0.018)
Age^2	-0.081*** (0.017)	-0.079*** (0.017)	-0.079*** (0.017)	-0.080*** (0.017)	-0.079*** (0.017)
Mid-level education	0.088 (0.081)		0.107 (0.081)		0.111 (0.081)
A-level education	0.049 (0.089)		0.094 (0.091)		0.096 (0.090)
Economics education	-0.030 (0.020)		-0.024 (0.020)		-0.026 (0.020)
Household structure	Yes	Yes	Yes	Yes	Yes
Occupational variables	Yes	Yes	Yes	Yes	Yes
N	1298	1298	1298	1298	1298
Pseodo - R^2	0.142	0.148	0.146	0.146	0.148

Standard errors in parentheses, significance levels *** 1%, ** 5%, * 10%

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Financial Literacy and Consumer Credit Choices

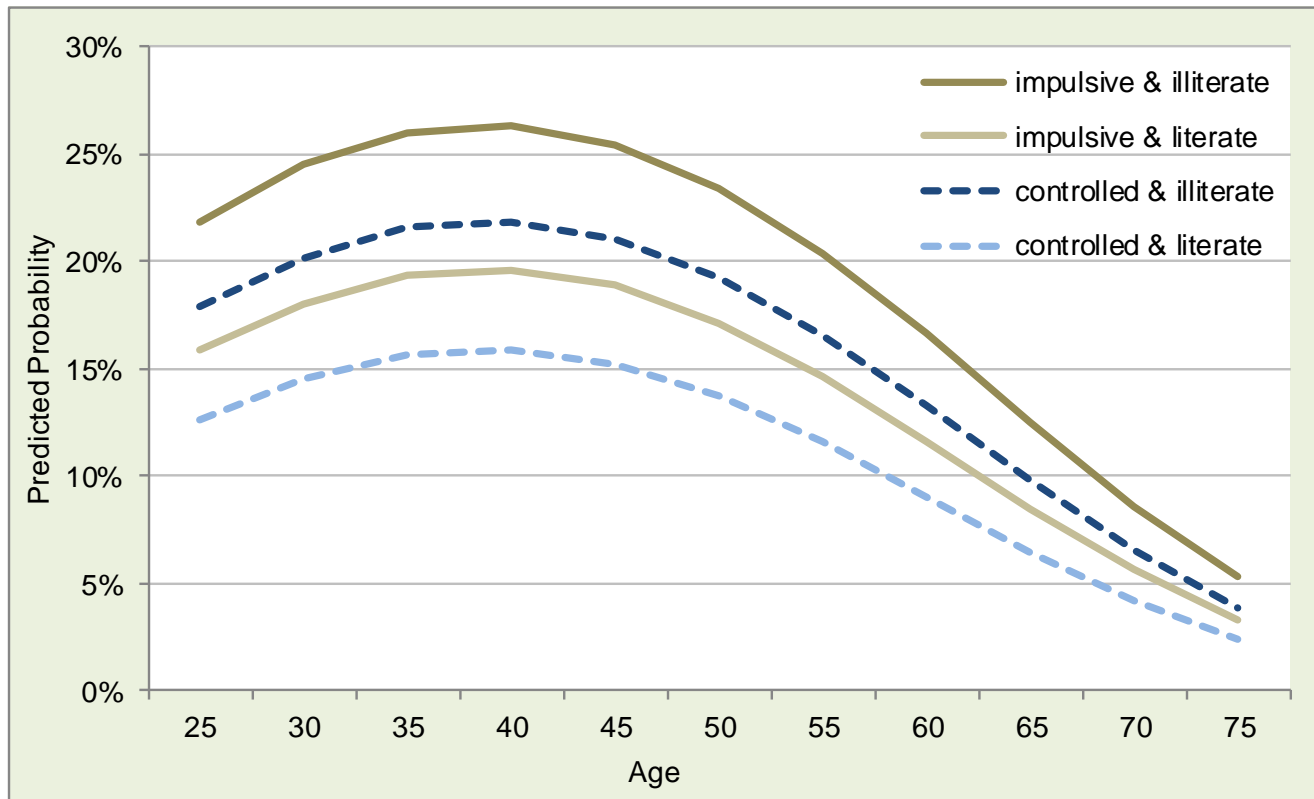How do Financial Literacy and Self-Control Interact?

Table: Ordered probit regression of overdraft usage frequency on financial literacy and self-control

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Financial literacy	-0.251*** (0.072)		-0.279*** (0.073)	-0.223*** (0.070)			
basic literacy					-0.111 (0.069)	-0.099 (0.070)	-0.089 (0.069)
advanced literacy					-0.178** (0.074)	-0.168** (0.074)	-0.145** (0.072)
Self-control		0.188** (0.081)	0.162** (0.082)	0.145* (0.080)		0.159* (0.082)	0.146* (0.081)
Log income	-0.025 (0.074)	-0.057 (0.074)	-0.021 (0.074)	0.006 (0.065)	-0.023 (0.074)	-0.019 (0.074)	0.002 (0.065)
2nd wealth quantile	-0.507*** (0.101)	-0.508*** (0.101)	-0.505*** (0.101)	-0.482*** (0.101)	-0.498*** (0.101)	-0.496*** (0.101)	-0.475*** (0.100)
3rd wealth quantile	-0.383*** (0.097)	-0.396*** (0.098)	-0.371*** (0.098)	-0.338*** (0.097)	-0.371*** (0.098)	-0.360*** (0.098)	-0.331*** (0.097)
4th wealth quantile	-0.748*** (0.104)	-0.776*** (0.104)	-0.737*** (0.105)	-0.683*** (0.103)	-0.741*** (0.104)	-0.731*** (0.105)	-0.681*** (0.103)
Age	0.061*** (0.018)	0.062*** (0.018)	0.060*** (0.018)	0.059*** (0.018)	0.062*** (0.018)	0.061*** (0.019)	0.060*** (0.018)
Age^2	-0.079*** (0.018)	-0.080*** (0.018)	-0.079*** (0.018)	-0.076*** (0.016)	-0.080*** (0.018)	-0.080*** (0.018)	-0.077*** (0.016)
Other demographics	Yes	Yes	Yes	No	Yes	Yes	No
Educational controls	Yes	Yes	Yes	No	Yes	Yes	No
N	1240	1240	1240	1240	1238	1238	1238
Pseodo - R^2	0.158	0.153	0.161	0.147	0.156	0.159	0.145

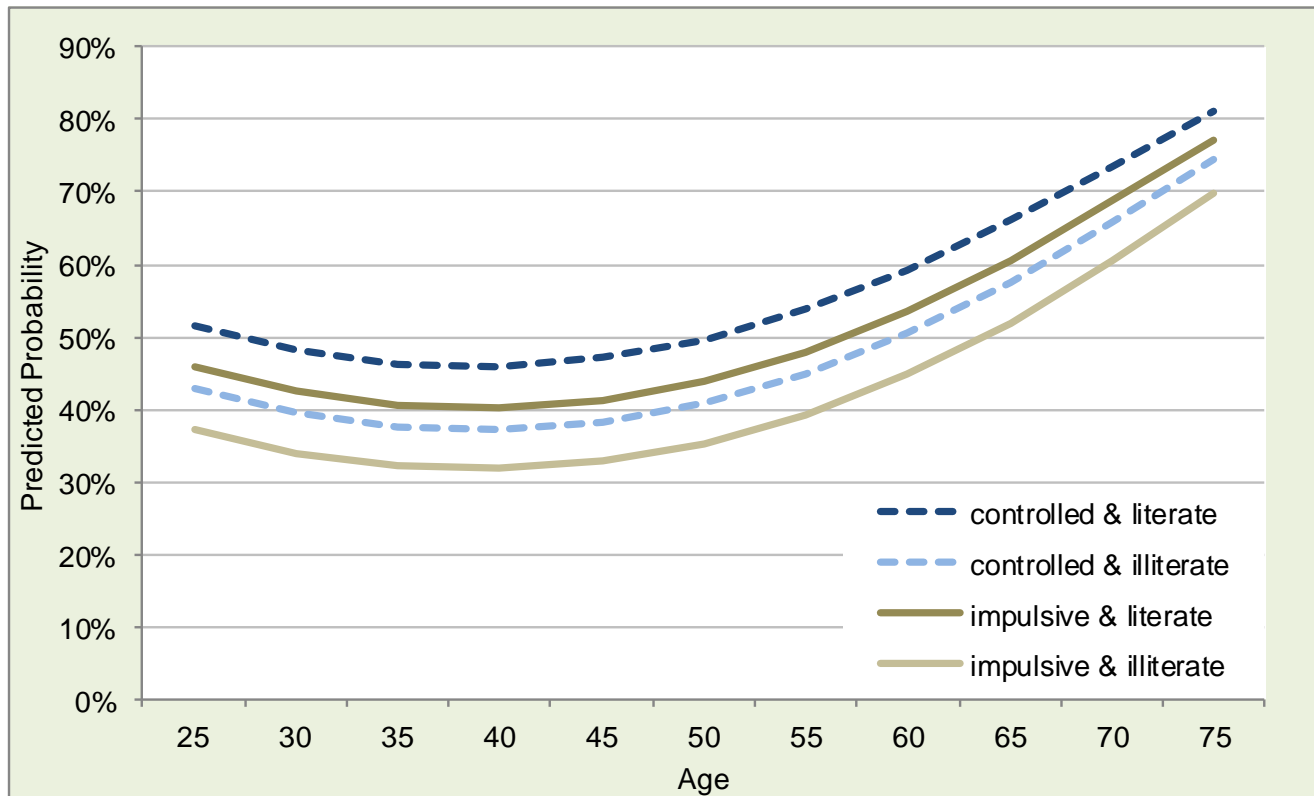Standard errors in parentheses, significance levels *** 1%, ** 5%, * 10%

Predicted probabilities for frequent overdraft usage

Figure: Predicted probabilities for people of different age to use overdraft often

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How do Financial Literacy and Self-Control Interact?

Predicted probabilities for never using overdraft

Figure: Predicted probabilities for people of different age to never use overdraft

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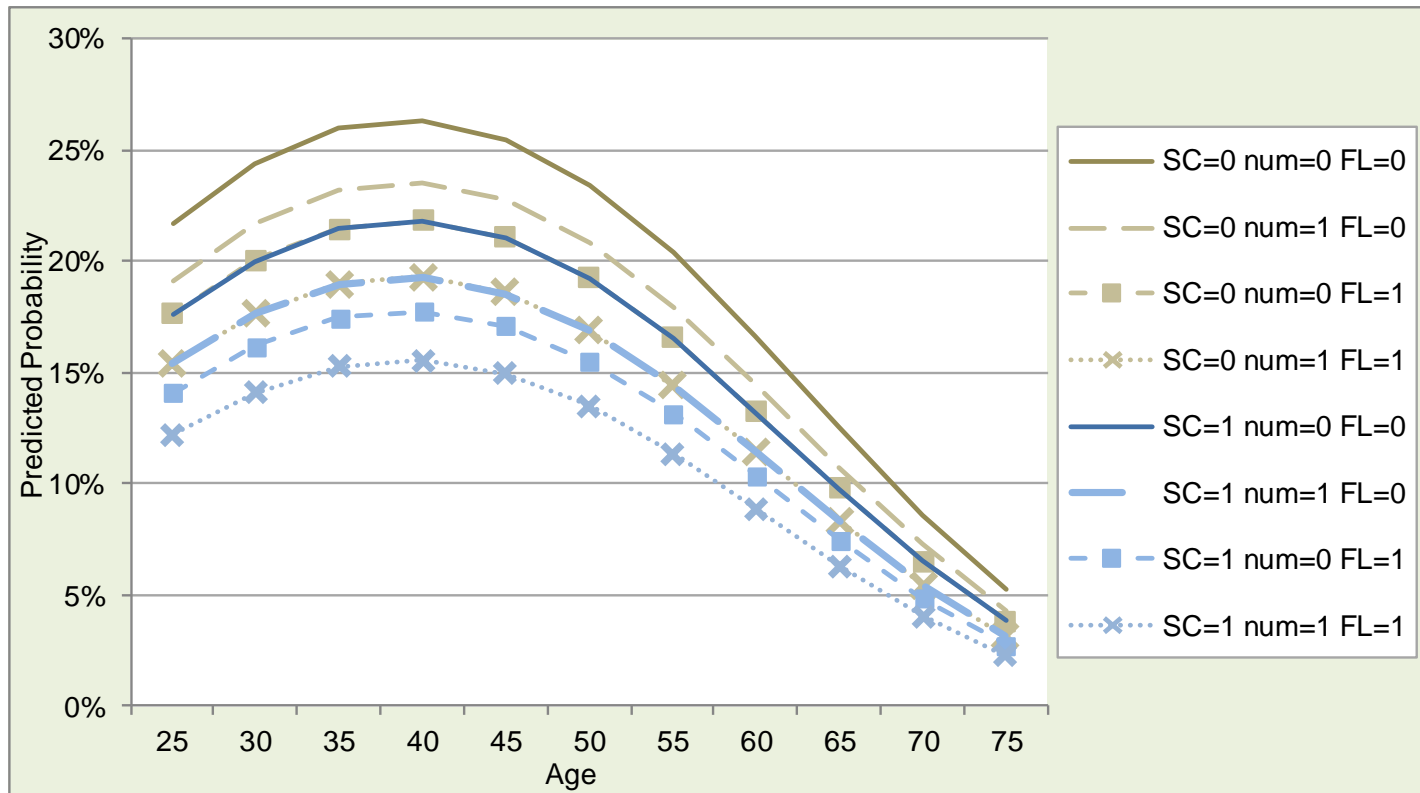
Implications

▶ Individuals with low self-control will rely on liquid forms of credit frequently.

▶ Financial literacy can dampen the effect of low self-control.

▶ Differences are strongest when the demand for credit is highest according to the life-cycle theory (around age 40).

▶ Strongest effect to reduce excessive credit usage could be obtained by a reduction of the liquidity of the products while fostering individuals' financial knowledge beyond mathematical skills.