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FINANCIAL LITERACY AND ENTREPRENEURSHIP

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Financial Literacy and Entrepreneurship

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[PRELIMINARY VERSION- DO NOT CITE WITHOUT AUTHORS' PERMISSION]

Abstract:

The recent financial-literacy literature has shown relationships between financial literacy and a number of desirable facets of economic behaviour, including stock-market participation and financial inclusion. We examine the relationship between financial literacy and entrepreneurship, using US data from the national financial-capability surveys. The results show large effects of financial literacy on the probability of being an entrepreneur, in magnitudes between 14-32 percent. Using novel geo and robust to endogeneity, heterogeneity and survivorship-bias concerns. Moreover, financial literacy exerts large positive impacts on the performance of entrepreneurs, in terms of income, savings and the availability of planned, emergency and retirement funds, and is related to lower levels of debt. While the curriculum of entrepreneurship education is still largely under investigation, our findings suggest financial literacy exerts a high impact on both the probability of being an entrepreneur and on entrepreneurial performance in the US.

JEL Classification: D14; J24; L26

Keywords: Financial Literacy; Financial Capability; Entrepreneurship; Self-employment, United States

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[The entrepreneur] must "*...be able to read, write, and account, and must be tolerable judge too of, perhaps, fifty or sixty different sorts of goods, their prices, qualities, and the markets where they are to be had cheapest. He must have all the knowledge, in short, that is necessary for a great merchant, which nothing hinders him from becoming but the want of a sufficient capital.*"

Adam Smith (1776: Book I, Ch. X: 12th page)

Since the early times of Adam Smith, the figure of the entrepreneur was attributed with specific unique cognitive and non-cognitive skills. The description of the technology of skill formation by Cunha and Heckman (2007) emphasizes on the positive impact of early investments in both cognitive and non-cognitive skills on outcomes later in life. Early skills investments affects both the current skill stock and generates dynamic-spillover effects later in life by making later investments more productive (Cunha and Heckman, 2008; Cunha, Heckman and Schennach, 2010). The recent entrepreneurship literature has emphasized on the relationship between human capital and firm performance or entrepreneurial income (Bates, 1990; Fairlie and Robb, 2007). However, studies examining the impact of entrepreneurship education programmes have shown insignificant impacts of entrepreneurship training on entrepreneurial intensions and the development of cognitive skills among primary-school pupils (Huber, Sloof and van Praag, 2014) and college students (Oosterbeek, van Praag and Ijsselstein, 2010; von Graevenitz, 2010). In the literature on labour-market outcomes (e.g. Heckman, 2006), there is more consensus regarding the positive impact of non-cognitive skills, such as risk-tolerance, creativity, self-efficacy etc. on both entrepreneurship and improvements in labour market outcomes.

It is thus the case that the entrepreneurship-education curriculum is largely open to investigation regarding specific components that contribute to the development of cognitive and non-cognitive skills whose stock and spillovers can spur entrepreneurial entry and performance later in life. When it comes to the cognitive skill-sets of entrepreneurship knowledge, Shane (2003) considers training/skills such as selling, problem solving, organizing and communicating.

We examine the relationship between financial literacy and entrepreneurship, using US data from the national financial-capability surveys. The results show large effects of financial literacy on the probability of being an entrepreneur, in magnitudes between 14-32 percent. Using novel geo and robust to endogeneity, heterogeneity and survivorship-bias concerns. Moreover, financial literacy exerts large positive impacts on the performance of entrepreneurs, in terms of income, savings and the availability of planned, emergency and retirement funds, and is related to lower levels of debt. While the curriculum of entrepreneurship education is still largely under investigation, our findings suggest financial literacy exerts a high impact on both the probability of being an entrepreneur and on entrepreneurial performance in the US.

The remainder of this study is organised as follows. *Section 2* reviews the relevant literature, *Section 3* presents the data, summary statistics and the empirical strategy. Then, *Section 4* presents the estimates for the probability to be an entrepreneur and *Section 5* discusses the results of the analysis for entrepreneurial performance. Finally, Section 6 concludes.

3. Data and Empirical Strategy

3.1 *The Data*

We utilize the US Financial Capability Study, conducted in the years 2009 and 2012[1].

The National Financial Capability Study (NFCS) was funded by the FINRA Investor Education Foundation and conducted by Applied Research and Consulting.

[1] The data and documentation are available at: http://www.usfinancialcapability.org. According to the data collectors: "*In consultation with the U.S. Department of the Treasury and President Bush's Advisory Council on Financial Literacy, the FINRA Investor Education Foundation commissioned the first national study of the financial capability of American adults in 2009. The overarching research objectives of the National Financial Capability Study were to benchmark key indicators of financial capability and evaluate how these indicators vary with underlying demographic, behavioral, attitudinal and financial literacy characteristics. The 2012 Study—similarly developed in consultation with the U.S. Department of the Treasury, other federal agencies and President Obama's Advisory Council on Financial Capability—aims to update key measures from the 2009 Study and to deepen exploration of topics that are highly relevant today (e.g., student loans and medical debt)*".

National and state-level findings are based on data from the 2012 and 2009 NFCS State-by-State Surveys, each of which were nationwide online surveys of over 25,000 American adults. Findings from the survey are weighted to be representative of Census distributions according to the American Community Survey. National figures are weighted to be representative of the national population in terms of age, gender, ethnicity, education and Census Division. State figures are weighted to be representative of each state in terms of age, gender, ethnicity and education.

Military findings are based on 1,000 military service members from the Military Survey, supplemented by 301 military service members from the State-by-State Survey. Military figures are weighted to approximate the military population by gender, pay grade, and active vs. reserve component, based on the Department of Defense's *2010 Demographics Report*.

The narrow definition of entrepreneurship considers individuals who report their status as self-employed and report having income from a business activity during the last year. The broad definition considers only those reporting their status as self-employed.

Our survey includes five financial literacy questions, covering the concepts of interest (numeracy), inflation (money illusion), along with the understanding of bonds, mortgages and risk. The exact wording of the questions is reported below (with the correct answer underlined):

1) *Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?*
   - <u>More than $102</u>
   - Exactly $102
   - Less than $102
   - Don't know
   - Prefer not to say

2) *Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?*

- More than today
- Exactly the same
- Less than today
- Don't know
- Prefer not to say

3) *If interest rates rise, what will typically happen to bond prices?*
   - They will rise
   - They will fall
   - They will stay the same
   - There is no relationship between bond prices and the interest rate
   - Don't know
   - Prefer not to say

4) *A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.*
   - True
   - False
   - Don't know
   - Prefer not to say

5) *Buying a single company's stock usually provides a safer return than a stock mutual fund.*
   - True
   - False
   - Don't know
   - Prefer not to say

3.2 *Summary Statistics*

Table 1 presents financial-literacy statistics by labour market status in the US Financial Capability Survey. The statistics show pooled averages for the years 2009 and 2012, weighted at the state level.

[Insert Table 1 about here]

3.3 *Empirical Strategy*

We first estimate the following regression model:

$$Entrepreneurship = a_0 + \beta_1 \, Financial\ Literacy + \beta_j X_j^{'} + \gamma_j F_j^{'} + \varepsilon \qquad (1)$$

The vector *X* includes demographic characteristics, such as gender, age dummies, race, education dummies, marital status dummies, the number of financially dependent children, partner self employment status, year of survey and state dummies. The vector *F* includes financial status, namely home ownership, other real estate ownership, and mortgage[2]. In separate specifications, we also include control variables for annual household income.

While Equation (1) establishes a broad association between entrepreneurship and financial literacy, a positive relation observed may be simply due to reverse causality. To the extent that we are only interested in establishing an association between financial literacy and entrepreneurship, the direction of causality is immaterial. To investigate causality, we need to take into account that financial literacy is endogenous, and may be correlated with the unobserved determinants of entrepreneurship, such as personality traits not captured in the survey or the specification of Equation (1). Hence, in separate specifications, we estimate Equation (1) using instrumental-variable (hereafter IV) regressions to account for the endogeneity of financial literacy. The instrumental variables for endogenous financial literacy used are: (1) Self-assessed mathematics ability, based on the question: "*How strongly do you agree or disagree with the following statement?... "I am pretty good at math*". Responses are given on a scale of 1 to 7, where 1 = "*Strongly Disagree*", 7 = "*Strongly Agree*" , and 4 = "Neither Agree Nor Disagree"; (2) % ≥high-school education at county level, *i.e.* the summation of the population ratios who (a) completed a university degree; (b) attended some university degree programme; (c) completed 12th grade and received a high school diploma or its equivalent (such as a GED), but did not report college experience[3].

We are then interested in the impact of financial literacy on entrepreneurial performance. We utilize several proxies to capture different facets of entrepreneurial performance, based on data availability. Namely, we examine: (i) annual household income, (ii) overindebtedness, (iii) spending less than income, (iv) existence of

[2] Fairlie (2007)

[3] The data on education by county is obtained from USDA (http://www.ers.usda.gov) and matched with individual respondents based on zip codes using geographical mapping data from the US Census Bureau (http://www.census.gov).

emergency or rainy-day funds, (v) saving for children's college education, (vi) planning for retirement, (vii) having a pension plan, and (viii) having declared bankruptcy in the last two years[4]. We are interested on the impact of financial literacy on the selected sample of entrepreneurs. Therefore, we estimate two-models in which the selection equation in specified as follows:

Entrepreneurship = 1 if:

$$a_0 + \beta_1 \, Financial\ Literacy + \beta_i X_i^{'} + \gamma_j F_j^{'} + \delta_y S_y^{'} + \varepsilon > 0 \qquad (2)$$

Then, the second stage is specified as follows:

$$Entrepreneurial\ Performance = \theta_0 + \zeta_1 \, Financial\ Literacy + \mu_i X_i^{'} + \rho_j F_j^{'} + \lambda + u \qquad (3)$$

The identification restrictions used in the vector *S* of the first-stage equation (2) are: [1] Social-capital county-level index for 2009, based on the updated database in Rupasingha and Goetz (2008)[5]. [2] The logarithm of county unemployment rate[6]. The

[4] The exact wording of the respective questions is as follows: (i) Annual household income: "*What is your household's approximate annual income, including wages, tips, investment income, public assistance, income from retirement plans, etc.? Would you say it is...* ": (1) "Less than $15,000"; (2) "At least $15,000 but less than $25,000"; (3) "At least $25,000 but less than $35,000"; (4) "At least $35,000 but less than $50,000"; (5) At least $50,000 but less than $75,000"; (6) 5,000 but less than $100,000; (7) "At least $100,000 but less than $150,000"; (8) "$150,000 or more". (ii) Overindebtedness: *"How strongly do you agree or disagree with the following statement?... 'I have too much debt right now'*. Please give your answer on a scale of 1 to 7, where 1 = "Strongly Disagree", 7 = "Strongly Agree", and 4 = "Neither Agree nor Disagree". (iii) Spending less than income: "*Over the past year, would you say your household's spending was less than, more than, or about equal to your household's income? Please do not include the purchase of a new house or car, or other big investments you may have made*"... Spending **less** than income; (iv) Existence of emergency or rainy-day funds: "*Have you set aside emergency or rainy-day funds that would cover your expenses for 3 months, in case of sickness, job loss, economic downturn, or other emergencies?*"... Yes; (v) Saving for children's college education: "*Are you setting aside any money for your children's college education?*"... Yes; (vi) Planning for retirement: "*Have you ever tried to figure out how much you need to save for retirement?*"... Yes; (vii) Having a pension plan: "*Do you or your[spouse/partner have any retirement plans through a current or previous employer, like a pension plan, a Thrift Savings Plan (TSP), or a 401(k)?*"... Yes; (viii) Having declared bankruptcy: "*Have you declared bankruptcy in the last two years?*"... Yes.

[5] The social-capital index is created by Rupasingha and Goetz (2008) using principal component analysis using the following four factors: (a) The aggregate for all of following variables (divided by population per 10,000) divided by 10: Religious organizations; Civic and social associations; Business associations; Political organizations; Professional organizations; Labor organizations; Bowling centers; Physical fitness facilities; Public golf courses; Sport clubs, managers, and promoters; (b) Voter turnout; (c) Census response rate; (d) Number of non-profit organizations per 10,000 population without including those with an international approach. The data and documentation are available at: http://aese.psu.edu/nercrd/community/social-capital-resources.

[6] Obtained from USDA (http://www.ers.usda.gov) and matched with individual respondents based on zip codes using geographical mapping data from the US Census Bureau (http://www.census.gov).

second-stage regression Equation (3) if then augmented with the estimate of the selection bias, the nonselection hazard, λ.

4. Entrepreneurship and Financial Literacy

4.1 *Results*

4.2 *Robustness*

5. Entrepreneurial performance and Financial Literacy

5.1 *Results*

5.2 *Robustness*

6. Conclusion

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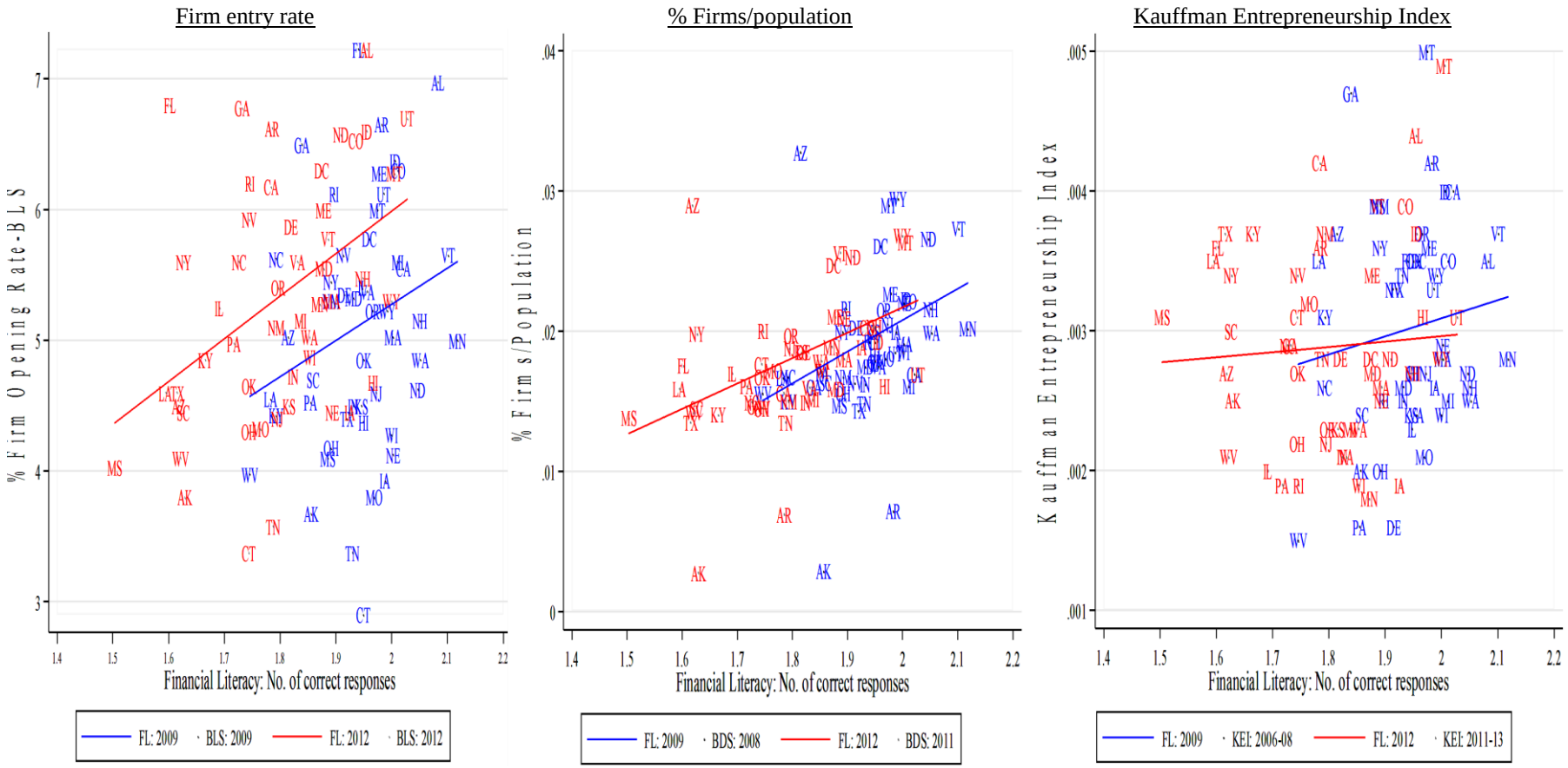
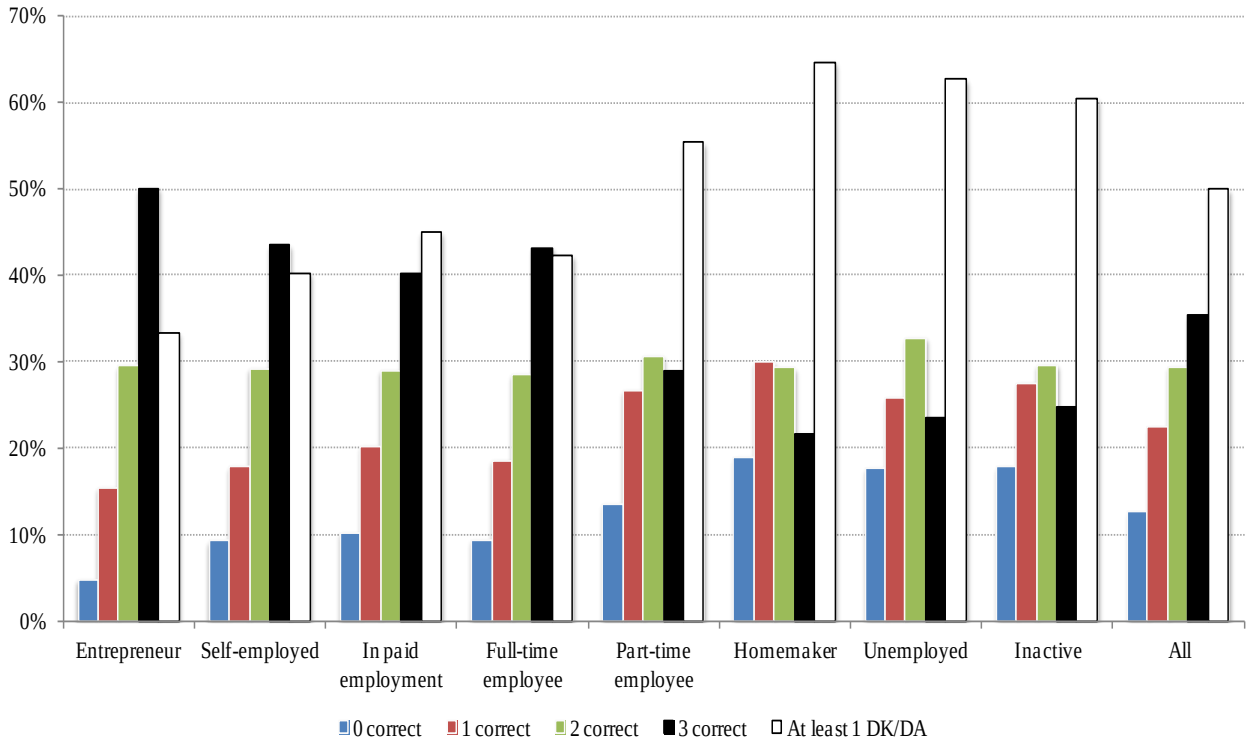
Figure 1
Financial literacy and entrepreneurship by state



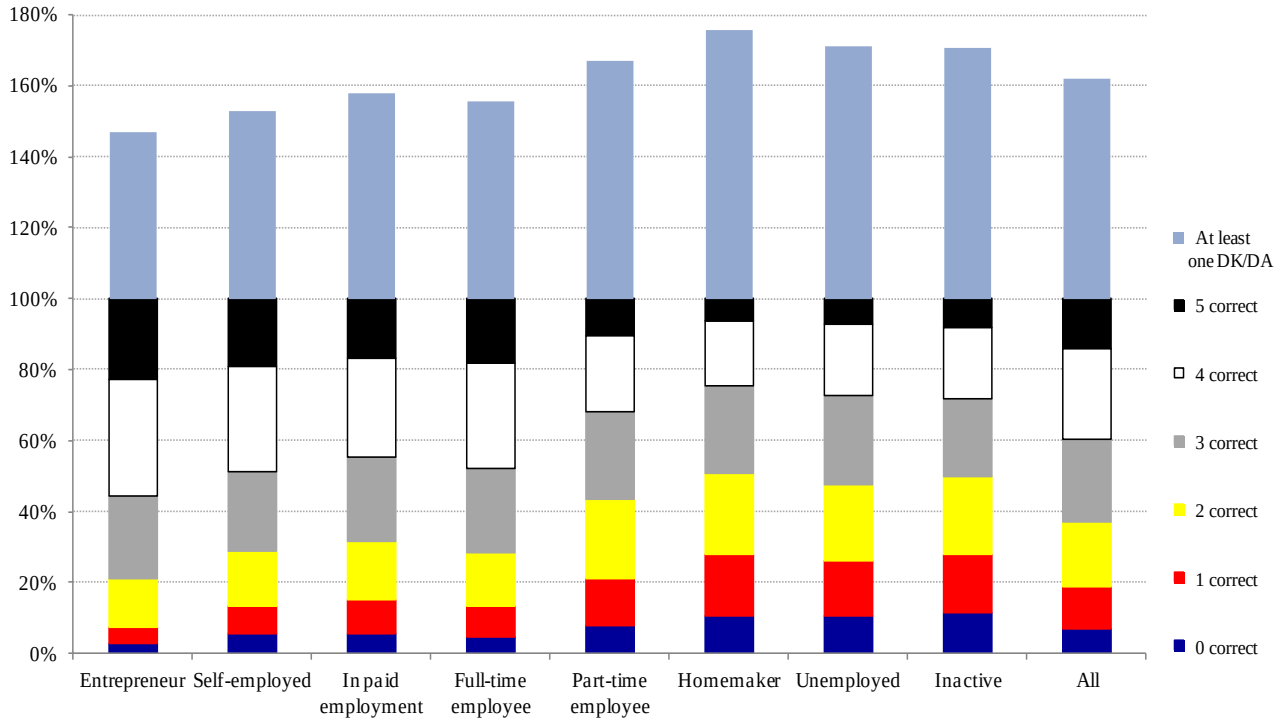
Notes:
Financial literacy figures are weighted using state-level weights, for gender, ethnicity and age. All figures are weighted by the state GDP per capita (constant 2005 $US).

Figure 2
Financial literacy and labour market status

Panel A: 3 basic questions



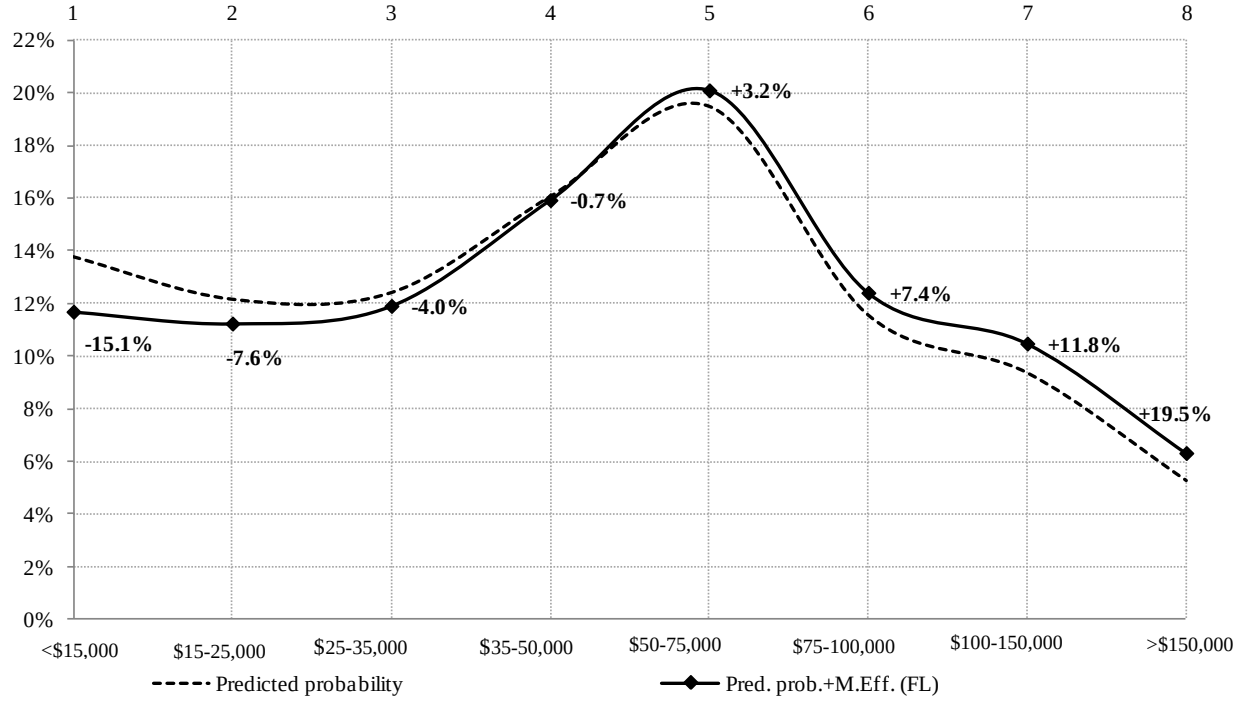
Panel B: 5 questions



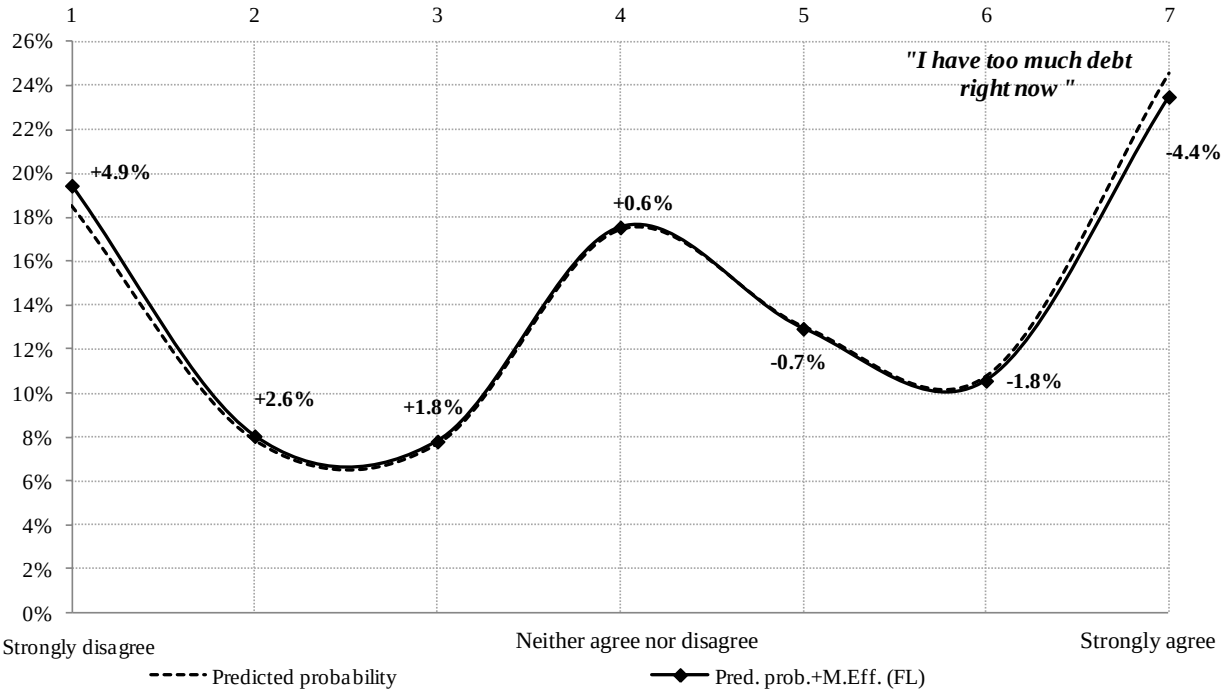
Notes

Figure 3
Marginal effects from ordinal models

Panel A: Annual household income and financial literacy



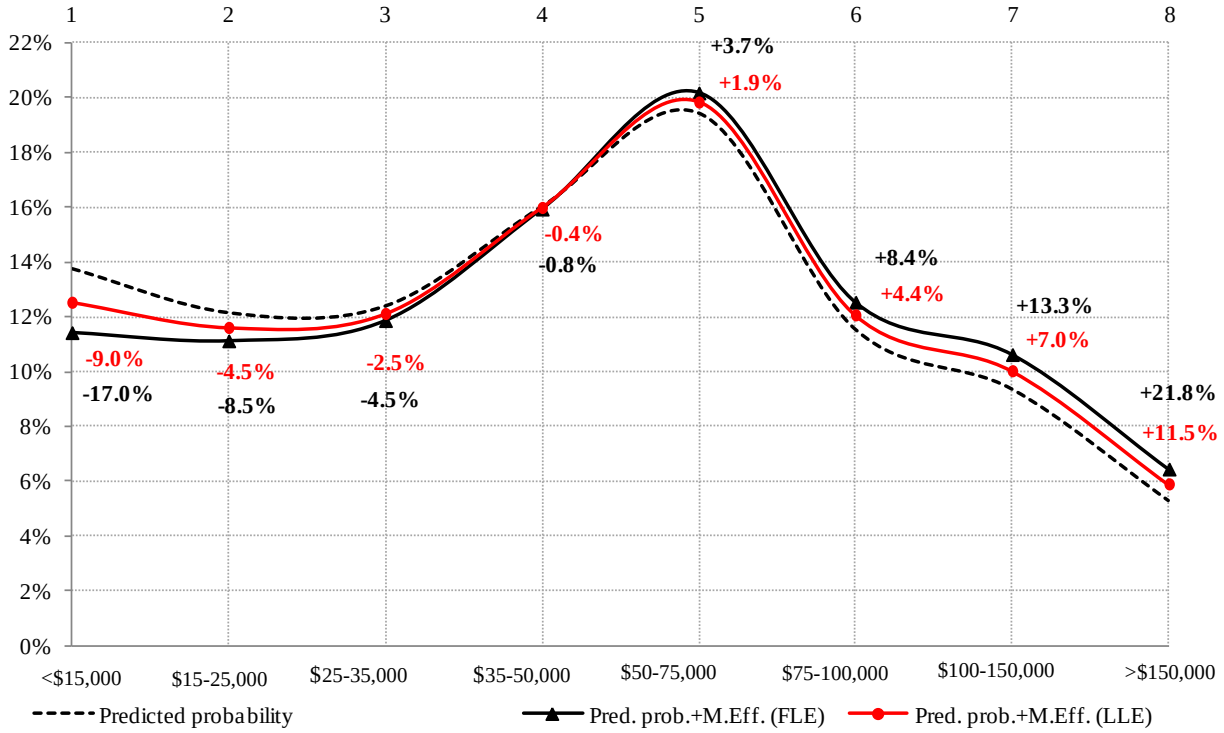
Panel B: Overindebtedness and financial literacy



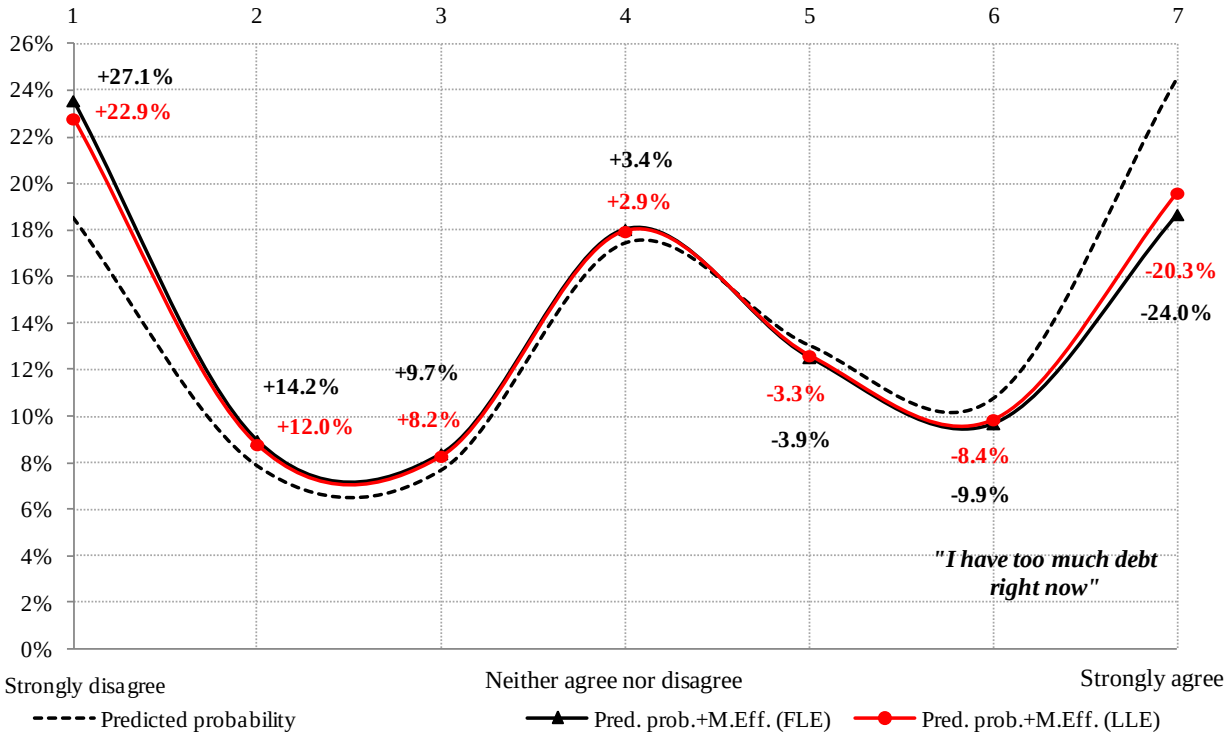
Notes:

Figure 4
Marginal effects from ordinal models

Panel A: Annual household income and entrepreneurship



Panel B: Overindebtedness and entrepreneurship



Notes:

Table 1
Financial literacy by labour-market activity

Labour market status:	(1) % sample	(2) #Correct responses [0, 3]	(3) #Wrong responses [0, 3]	(4) #DK/DA responses [0, 3]	(5) Interest question	(6) Inflation question	(7) Risk question	(8) #Correct responses [0, 5]	(9) Bond question	(10) Mortgage question	(11) High FL: ≥2/3	(12) High FL: ≥4/5
All	*100.0%*	*1.88*	*0.35*	*0.77*	*76.6%*	*61.4%*	*49.6%*	*2.91*	*27.0%*	*76.1%*	*35.4%*	*39.5%*
Entrepreneur	*6.1%*	2.25	0.31	0.44	86.1%	75.1%	63.8%	3.47	35.8%	86.3%	50.2%	55.8%
Self-employed	*10.2%*	2.07	0.34	0.59	80.5%	68.8%	57.8%	3.20	32.4%	80.6%	43.5%	48.6%
In paid employment	*60.4%*	1.99	0.33	0.67	80.1%	65.0%	54.3%	3.09	30.0%	80.0%	40.3%	44.7%
Full-time employee	*48.6%*	2.06	0.32	0.62	81.6%	67.2%	57.0%	3.20	31.5%	82.3%	43.3%	48.0%
Part-time employee	*11.8%*	1.75	0.39	0.86	74.2%	56.5%	44.2%	2.70	24.3%	70.9%	28.9%	32.1%
Homemaker	*12.1%*	1.54	0.40	1.06	68.5%	49.2%	36.3%	2.42	17.5%	70.4%	21.7%	24.7%
Unemployed	*6.0%*	1.62	0.38	1.00	66.8%	59.0%	36.5%	2.50	19.8%	67.6%	23.6%	27.1%
Inactive	*11.3%*	1.61	0.39	0.99	70.0%	51.7%	39.8%	2.47	21.2%	64.1%	24.8%	28.0%

Notes: Weighted averages from 40,641 observations are presented. Students, the retired and those older than 65 have been dropped from the sample. High financial-literacy is defined as providing 4 or 5 correct responses out of the 5 financial-literacy questions.

Table 2
Sample averages and mean differences

	(1) All	(2) E	(3) Non-E	(4) *Difference*	(5) High FL	(6) Low FL	(7) *Difference*
Financial literacy:							
#correct responses	2.91	3.47	2.87	0.5989 ***	4.35	1.96	2.3896 ***
High fin. literacy (>3 correct)	39.5%	55.8%	38.5%	0.1732 ***	100.0%	0.0%	1.0000
Interest question: % correct	76.6%	86.1%	76.0%	0.1008 ***	97.7%	62.9%	0.3486 ***
Inflation: % correct	61.4%	75.1%	60.6%	0.1453 ***	95.5%	39.2%	0.5624 ***
Bonds: % correct	27.0%	35.8%	26.5%	0.0937 ***	52.0%	10.7%	0.4135 ***
Mortgages: % correct	76.1%	86.3%	75.5%	0.1079 ***	98.1%	61.8%	0.3635 ***
Risk: % correct	49.6%	63.8%	48.7%	0.1512 ***	92.0%	21.9%	0.7016 ***
Individual characteristics:							
Male	48.5%	61.2%	47.7%	0.1354 ***	61.5%	40.0%	0.2149 ***
Age: 18-24	11.7%	5.1%	12.1%	-0.0698 ***	5.6%	15.6%	-0.1005 ***
Age: 25-34	22.4%	14.0%	23.0%	-0.0898 ***	18.3%	25.1%	-0.0682 ***
Age: 35-44	21.7%	21.5%	21.7%	-0.0020	22.8%	21.0%	0.0178 ***
Age: 45-54	24.8%	29.7%	24.5%	0.0518 ***	29.0%	22.2%	0.0682 ***
Age: 55-64	16.7%	23.4%	16.3%	0.0717 ***	20.9%	14.0%	0.0689 ***
White	76.2%	81.3%	75.9%	0.0535 ***	81.8%	72.6%	0.0918 ***
No high-school education	6.2%	3.0%	6.4%	-0.0344 ***	1.7%	9.1%	-0.0742 ***
High-school education	29.3%	23.4%	29.7%	-0.0626 ***	18.0%	36.7%	-0.1873 ***
Some university education	37.8%	40.0%	37.6%	0.0237 **	39.7%	36.5%	0.0315 ***
University education	17.5%	21.0%	17.3%	0.0365 ***	24.6%	12.9%	0.1162 ***
Postgraduate education	9.2%	12.7%	9.0%	0.0368 ***	16.1%	4.7%	0.1138 ***
Married	55.0%	60.9%	54.6%	0.0632 ***	63.0%	49.8%	0.1324 ***
Single	29.4%	23.2%	29.8%	-0.0654 ***	22.6%	33.8%	-0.1119 ***
Widowed/Divorced/Separated	15.6%	15.9%	15.6%	0.0022	14.4%	16.5%	-0.0206 ***
# financially dependent children	0.90	0.77	0.90	-0.1311 ***	0.85	0.93	-0.0756 ***
Partner entrepreneur	5.5%	26.7%	4.2%	0.2243 ***	6.7%	4.8%	0.0183 ***
Home owner	56.4%	75.6%	55.2%	0.2039 ***	69.5%	47.8%	0.2168 ***
Real estate	12.6%	32.4%	11.3%	0.2112 ***	17.7%	9.2%	0.0852 ***
Mortgage	39.9%	47.5%	39.4%	0.0812 ***	52.2%	31.8%	0.2040 ***
Performance indicators:							
Income (8 categories)							
Income: <$15,000	13.8%	5.9%	14.3%	-0.0842 ***	6.3%	18.7%	-0.1238 ***
Income: $15,000-$25,000	12.4%	8.6%	12.7%	-0.0402 ***	7.4%	15.7%	-0.0831 ***
Income: $25,000-$35,000	12.4%	10.8%	12.5%	-0.0172 **	9.0%	14.6%	-0.0559 ***
Income: $35,000-$50,000	15.8%	15.9%	15.8%	0.0010	14.5%	16.7%	-0.0217 ***
Income: $50,000-$75,000	19.2%	20.7%	19.1%	0.0157	21.9%	17.5%	0.0449 ***
Income: $75,000-$100,000	11.5%	13.6%	11.4%	0.0221 ***	16.2%	8.5%	0.0770 ***
Income: $100,000-$150,000	9.5%	12.6%	9.3%	0.0333 ***	15.2%	5.8%	0.0946 ***
Income: >$150,000	5.3%	11.9%	4.9%	0.0696 ***	9.4%	2.6%	0.0680 ***
Overindebted (7 categories)	4.26	3.85	4.29	-0.4367 ***	4.06	4.38	-0.3163 ***
Spending less than income	40.3%	45.7%	39.9%	0.0574 ***	46.5%	36.2%	0.1027 ***
Rainy-day funds	32.7%	47.2%	31.8%	0.1541 ***	43.5%	25.6%	0.1787 ***
Child-college funds	14.9%	17.8%	14.7%	0.0306 ***	18.1%	12.8%	0.0532 ***
Retirement planning	52.8%	44.3%	53.3%	-0.0904 ***	67.7%	43.0%	0.2465 ***
Pension plan	37.6%	52.4%	36.7%	0.1573 ***	53.1%	27.5%	0.2563 ***
Bankruptcy in last 2 years	4.2%	3.5%	4.2%	-0.0064	2.6%	5.2%	-0.0262 ***
#Observations	*40,641*	*2,495*	*38,146*		*17,141*	*23,500*	

Notes: The narrow definition of entrepreneurship considers individuals who report their status as self-employed and report having income from a business activity during the last year. The broad definition considers only those reporting their status as self-employed.

Table 3

Differences in the performance of entrepreneurs by financial literacy status

	E (narrow def: 2,495)			E (broad def: 4,140)		
	High FL	Low FL	*Difference*	High FL	Low FL	*Difference*
#Observations	*1,454*	*1,041*		*2,139*	*2,001*	
Income (8 categories)	5.28	4.36	0.9166 ***	5.05	3.87	1.1806 ***
Income: <$15,000	3.5%	8.9%	-0.0547 ***	5.0%	16.2%	-0.1113 ***
Income: $15,000-$25,000	5.4%	12.7%	-0.0733 ***	7.2%	14.5%	-0.0733 ***
Income: $25,000-$35,000	9.0%	13.0%	-0.0406 ***	9.7%	13.5%	-0.0376 ***
Income: $35,000-$50,000	14.8%	17.3%	-0.0241	15.3%	17.5%	-0.0222 *
Income: $50,000-$75,000	21.4%	19.8%	0.0156	21.0%	16.7%	0.0423 ***
Income: $75,000-$100,000	15.8%	10.9%	0.0493 ***	15.1%	9.2%	0.0591 ***
Income: $100,000-$150,000	15.3%	9.3%	0.0595 ***	14.3%	7.3%	0.0696 ***
Income: >$150,000	14.9%	8.0%	0.0682 ***	12.5%	5.2%	0.0733 ***
Overindebted (7 categories)	3.69	4.04	-0.3437 **	3.74	4.05	-0.3140 ***
-1- Strongly disagree						
-2-						
-3-						
-4- Neither agree nor disagree						
-5-						
-6-						
-7- Strongly agree						
Savings	48.3%	42.3%	0.0598 ***	46.2%	40.4%	0.0583 ***
Rainy-day funds	51.1%	42.2%	0.0895 ***	48.3%	35.2%	0.1312 ***
Child-college funds	17.8%	17.7%	0.0013	16.2%	14.3%	0.0189
Retirement planning	50.8%	36.0%	0.1486 ***	49.6%	30.6%	0.1893 ***
Pension plan	60.6%	42.2%	0.1840 ***	57.3%	34.7%	0.2264 ***
Bankruptcy in last 2 years						

Notes: The narrow definition of entrepreneurship considers individuals who report their status as self-employed and report having income from a business activity during the last year. The broad definition considers only those reporting their status as self-employed.

Table 4
Entrepreneurship and financial literacy

	(1) EFL	(2) EFLH	(3) EFL09	(4) EFL12	(5) EFLI	(6) EFLI5
%Effect	*17.5%*	*19.3%*	*13.8%*	*20.2%*	*16.5%*	*12.2%*
Predicted probability	0.0590	0.0590	0.0600	0.0578	0.0590	0.0590
Financial literacy	0.010***	0.011***	0.008***	0.012***	0.010***	0.007***
	[0.001]	[0.003]	[0.002]	[0.002]	[0.001]	[0.001]
Male	0.028***	0.030***	0.034***	0.023***	0.029***	0.028***
	[0.002]	[0.002]	[0.003]	[0.004]	[0.002]	[0.002]
Age: 18-24	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*
″ : 25-34	-0.015***	-0.015***	-0.019***	-0.004	-0.017***	-0.017***
	[0.005]	[0.005]	[0.006]	[0.008]	[0.005]	[0.005]
″ : 35-44	0.001	0.002	-0.008	0.018**	-0.001	-0.001
	[0.004]	[0.004]	[0.005]	[0.008]	[0.004]	[0.004]
″ : 45-54	0.003	0.005	-0.002	0.017**	0.001	0.001
	[0.004]	[0.004]	[0.005]	[0.007]	[0.004]	[0.004]
″ : 55-64	0.006	0.008*	0.001	0.022***	0.004	0.004
	[0.005]	[0.005]	[0.006]	[0.008]	[0.005]	[0.005]
Ethnicity: White	0.004	0.005	-0.001	0.008	0.003	0.003
	[0.006]	[0.006]	[0.008]	[0.008]	[0.006]	[0.006]
″ : Black	0.007	0.006	-0.003	0.015*	0.008	0.008
	[0.007]	[0.007]	[0.010]	[0.009]	[0.007]	[0.007]
″ : Hispanic	-0.014**	-0.014**	-0.018**	-0.009	-0.014**	-0.014**
	[0.006]	[0.006]	[0.008]	[0.008]	[0.006]	[0.006]
″ : Asian	-0.022***	-0.022***	-0.035***	-0.009	-0.022***	-0.021***
	[0.008]	[0.008]	[0.012]	[0.011]	[0.008]	[0.008]
″ : Other	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*
Education: postgraduate	0.017**	0.022***	0.022*	0.012	0.008	0.007
	[0.007]	[0.007]	[0.012]	[0.009]	[0.008]	[0.008]
″ : completed bachelors	0.021***	0.025***	0.02	0.022***	0.014**	0.013*
	[0.007]	[0.007]	[0.012]	[0.009]	[0.007]	[0.007]
″ : incomplete university	0.017**	0.021***	0.020*	0.015*	0.012*	0.011
	[0.007]	[0.007]	[0.012]	[0.008]	[0.007]	[0.007]
″ : completed high-school	0.011	0.013*	0.011	0.012	0.006	0.006
	[0.007]	[0.007]	[0.012]	[0.008]	[0.007]	[0.007]
″ : did not complete high-school	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*
Married	-0.013***	-0.013***	-0.001	-0.028***	-0.017***	-0.017***
	[0.003]	[0.003]	[0.005]	[0.005]	[0.003]	[0.003]
Single	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*
Widowed/divorced/separated	0.008*	0.008**	0.017***	-0.003	0.007*	0.007*
	[0.004]	[0.004]	[0.005]	[0.006]	[0.004]	[0.004]
#Financially-dependent children	-0.004***	-0.005***	-0.005***	-0.004**	-0.005***	-0.005***
	[0.001]	[0.001]	[0.002]	[0.002]	[0.001]	[0.001]
Partner self-employed	0.110***	0.110***	0.106***	0.114***	0.109***	0.109***
	[0.004]	[0.004]	[0.005]	[0.006]	[0.004]	[0.004]
Homeowner	0.026***	0.027***	0.030***	0.020***	0.023***	0.023***
	[0.003]	[0.003]	[0.004]	[0.004]	[0.003]	[0.003]
Real estate owner	0.043***	0.044***	0.047***	0.039***	0.042***	0.041***
	[0.003]	[0.003]	[0.004]	[0.004]	[0.003]	[0.003]
Income shock in last year	0.023***	0.023***	0.024***	0.023***	0.025***	0.024***
	[0.002]	[0.002]	[0.003]	[0.004]	[0.002]	[0.002]
Risk taking [0, 10]	0.003***	0.003***	0.002***	0.003***	0.002***	0.002***
	[0.000]	[0.000]	[0.001]	[0.001]	[0.000]	[0.000]

Table 4 continued in next page

Table 4 continued from last page

	(1)	(2)	(3)	(4)	(5)	(6)
Year 2012	0.006***	0.005**	–	–	0.006***	0.006***
	[0.002]	[0.002]			[0.002]	[0.002]
Annual household income: ≤$15,000	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
" : $15,000-$25,000	–	–	–	–	0.017***	0.017***
					[0.005]	[0.005]
" : $25,000-$35,000	–	–	–	–	0.025***	0.024***
					[0.006]	[0.006]
" : $35,000-$50,000	–	–	–	–	0.026***	0.025***
					[0.005]	[0.005]
" : $50,000-$75,000	–	–	–	–	0.024***	0.024***
					[0.005]	[0.005]
" : $75,000-$100,000	–	–	–	–	0.023***	0.022***
					[0.006]	[0.006]
" : $100,000-$150,000	–	–	–	–	0.022***	0.021***
					[0.006]	[0.006]
" : ≥$150,000	–	–	–	–	0.042***	0.041***
					[0.007]	[0.007]
State FE	+	+	+	+	+	+
No. of observations	*40,641*	*40,641*	*22,124*	*18,517*	*40,641*	*40,641*
Pseudo R^2	*0.141*	*0.139*	*0.157*	*0.135*	*0.144*	*0.144*
Log-likelihood	*-7,752*	*-7,775*	*-4,147*	*-3,554*	*-7,727*	*-7,725*
Wald $\chi 2$	*2,301.4****	*2,273.5****	*1,417.5****	*972.0****	*2,328.8****	*2,341.7****

Notes: * p<0.10, ** p<0.05, *** p<0.01

Table 5
Robustness, sub-samples, IVs and components

		M. Eff.	*[S.E.]*	*%Effect*	*Pred. prob.*	*# obs.*
Panel A: Linear probability models						
(1)	EFL	0.009***	[0.001]	*14.8%*	*0.0590*	40,641
(2)	EFLH	0.012***	[0.003]	*21.1%*	*0.0590*	40,641
(3)	EFL09	0.007***	[0.002]	*11.0%*	*0.0600*	22,124
(4)	EFL12	0.011***	[0.002]	*18.2%*	*0.0578*	18,517
(5)	EFLI	0.008***	[0.001]	*13.8%*	*0.0590*	40,641
(6)	EFLI5	0.006***	[0.001]	*10.5%*	*0.0590*	40,641
Panel B: Sub-samples						
(7)	Aged 18-34	0.007***	[0.002]	*21.45%*	*0.0330*	12,845
(8)	Age 35-64	0.011***	[0.002]	*15.73%*	*0.0696*	26,747
(9)	Employed only	0.013***	[0.002]	*14.81%*	*0.0851*	28,688
(10)	Full-time employed only	0.015***	[0.002]	*14.06%*	*0.1033*	23,900
(11)	Males	0.012***	[0.002]	*16.73%*	*0.0744*	18,235
(12)	Females	0.008***	[0.001]	*18.91%*	*0.0444*	22,406
(13)	Self-employed	0.006***	[0.002]	*5.76%*	*0.1006*	40,641
Panel C: Matching and weighting						
(14)	Matched [PSM]	0.013***	[0.002]	*17.40%*	*0.0757*	29,653
(15)	Non-weighted	0.010***	[0.001]	*16.34%*	*0.0614*	40,641
Panel D: Instrumental variables						
(16)	Math. ability, fin. education mandate [2009]	0.031***	[0.011]	*46.45%*	*0.0662*	22,124
(17)	", + Income terms	0.028**	[0.011]	*43.13%*	*0.0652*	22,124
(18)	", Self-employed	0.021*	[0.012]	*19.11%*	*0.1084*	22,124
(19)	Financial education mandate [2009]	0.271***	[0.023]	*89.79%*	*0.3023*	22,124
(20)	", + Income terms	0.274***	[0.024]	*90.00%*	*0.3040*	22,124
(21)	", Self-employed	0.269***	[0.021]	*83.04%*	*0.3246*	22,124
(22)	Math. ability, financial education [2012]	0.040***	[0.011]	*58.34%*	*0.0680*	18,517
(23)	", + Income terms	0.039***	[0.011]	*57.42%*	*0.0676*	18,517
(24)	": Financial literacy [5 questions]	0.027***	[0.008]	*41.07%*	*0.0669*	18,517
(25)	Mathematics ability [2009/2012]	0.030***	[0.008]	*45.98%*	*0.0644*	40,641
(26)	Mathematics ability [2012]	0.038***	[0.011]	*56.42%*	*0.0670*	18,517
(27)	Financial education [2012]	0.049*	[0.025]	*66.80%*	*0.0732*	18,517
(28)	I am good at dealing with day-to-day financial matters, such as checking accounts, credit and debit cards, and tracking expenses [1-7]	0.067***	[0.016]	*78.34%*	*0.0856*	40,641
(29)	Most knowledgeable in household about saving, investing and debt	0.051**	[0.026]	*67.47%*	*0.0755*	40,641
(30)	Lewbel's (2012) method	0.010***	[0.003]	*17.23%*	*0.0590*	40,641
Panel E: Financial literacy components [incl. income terms]						
(31)	Inflation question	0.016***	[0.003]	*26.89%*	*0.0590*	40,641
	Interest question	0.008***	[0.003]	*13.83%*		
	Risk question	0.007**	[0.003]	*11.47%*		
(32)	Inflation question	0.014***	[0.003]	*24.56%*	*0.0590*	40,641
	Interest question	0.007**	[0.003]	*11.83%*		
	Risk question	0.006**	[0.003]	*9.51%*		
	Bond question	0.002	[0.003]	*3.73%*		
	Mortgage question	0.009**	[0.003]	*14.49%*		

Notes:

Table 6
Financial performance and financial literacy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Annual household income	*Over-indebted*	*Financially constrained*	*Savings*	*Emergency funds*	*Retirement plan*	*Bankruptcy*
%Entrepreneur effect	*16.86%*	*-22.37%*	*-17.16%*	*0.31%*	*13.67%*	*5.93%*	*-14.52%*
%Financial-literacy effect	*19.51%*	*-4.38%*	*-8.28%*	*4.17%*	*3.63%*	*14.36%*	*-43.83%*
Predicted probability	*0.0528*	*0.2459*	*0.4786*	*0.4029*	*0.3265*	*0.3764*	*0.0415*
Entrepreneur	0.114***	-0.185***	-0.082***	0.001	0.045***	0.022**	-0.006
	[0.025]	[0.036]	[0.015]	[0.011]	[0.009]	[0.010]	[0.005]
Financial literacy	0.131***	-0.036***	-0.040***	0.017***	0.012***	0.054***	-0.018***
	[0.006]	[0.009]	[0.003]	[0.003]	[0.002]	[0.003]	[0.001]
Male	0.014	-0.002	-0.027***	0.001	0.017***	0.004	0.013***
	[0.012]	[0.017]	[0.007]	[0.005]	[0.005]	[0.005]	[0.002]
Age: 18-24	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*
″ : 25-34	0.187***	0.324***	0.037***	-0.022**	-0.065***	0.013	0.004
	[0.022]	[0.034]	[0.013]	[0.009]	[0.008]	[0.009]	[0.004]
″ : 35-44	0.297***	0.330***	0.063***	-0.018*	-0.097***	0.012	0.007*
	[0.021]	[0.034]	[0.013]	[0.009]	[0.008]	[0.009]	[0.004]
″ : 45-54	0.267***	0.252***	0.046***	-0.008	-0.082***	0.043***	0.002
	[0.021]	[0.034]	[0.013]	[0.009]	[0.008]	[0.009]	[0.004]
″ : 55-64	0.209***	0.133***	0.005	0.006	-0.026***	0.076***	0.005
	[0.023]	[0.037]	[0.014]	[0.010]	[0.009]	[0.009]	[0.004]
Ethnicity: White	0.177***	0.054	0.007	-0.025**	-0.01	-0.005	-0.002
	[0.025]	[0.037]	[0.014]	[0.012]	[0.010]	[0.011]	[0.005]
″ : Black	0.004	0.105**	0.035**	0.011	-0.035***	0.033***	0.001
	[0.030]	[0.042]	[0.016]	[0.014]	[0.012]	[0.012]	[0.005]
″ : Hispanic	-0.001	-0.014	0.028*	0.023*	0.001	-0.015	-0.001
	[0.026]	[0.037]	[0.014]	[0.012]	[0.010]	[0.011]	[0.005]
″ : Asian	0.074**	-0.229***	-0.001	0.024	0.064***	-0.033**	0.005
	[0.036]	[0.051]	[0.020]	[0.017]	[0.014]	[0.016]	[0.007]
″ : Other	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*
Education.: postgraduate	1.638***	0.086**	-0.156***	0.046***	0.141***	0.157***	0.008
	[0.033]	[0.043]	[0.017]	[0.014]	[0.014]	[0.014]	[0.006]
″ : completed bachelors	1.156***	0.091**	-0.111***	0.048***	0.137***	0.129***	0.003
	[0.031]	[0.037]	[0.015]	[0.013]	[0.013]	[0.013]	[0.005]
″ : incomplete university	0.828***	0.147***	-0.068***	0.014	0.075***	0.098***	0.005
	[0.029]	[0.035]	[0.014]	[0.013]	[0.012]	[0.013]	[0.005]
″ : completed high-school	0.568***	0.028	-0.049***	0.026**	0.065***	0.041***	0.003
	[0.029]	[0.034]	[0.014]	[0.012]	[0.012]	[0.013]	[0.005]
″ : not complete high-school	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*
Married	0.731***	0.094***	0.002	-0.023***	-0.01	0.015**	0.017***
	[0.016]	[0.023]	[0.009]	[0.007]	[0.006]	[0.007]	[0.003]
Single	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*	[*Ref.]*
Widowed/divorced/separated	-0.018	0.107***	0.013	-0.024***	-0.032***	0.034***	0.013***
	[0.019]	[0.029]	[0.011]	[0.009]	[0.008]	[0.008]	[0.004]
#Fin.-dependent children	0.051***	0.064***	0.016***	-0.036***	-0.033***	-0.002	0.004***
	[0.005]	[0.008]	[0.003]	[0.002]	[0.002]	[0.002]	[0.001]
Partner self-employed	0.102***	-0.031	-0.067***	0.009	-0.002	0.006	0.001
	[0.026]	[0.038]	[0.016]	[0.011]	[0.010]	[0.010]	[0.005]
Homeowner	0.606***	-0.069***	-0.116***	0.043***	0.120***	0.066***	-0.005**
	[0.013]	[0.020]	[0.007]	[0.006]	[0.005]	[0.005]	[0.003]

Table 6 continued in next page

Table 6 continued from last page

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Real estate owner	0.436***	-0.110***	-0.129***	0.023***	0.094***	0.068***	0.015***
	[0.018]	[0.026]	[0.012]	[0.008]	[0.006]	[0.007]	[0.003]
Income shock in last year	0.066***	-0.014***	-0.023***	0.006***	0.020***	0.026***	0.001*
	[0.002]	[0.003]	[0.001]	[0.001]	[0.001]	[0.001]	[0.000]
Risk taking [0, 10]	-0.357***	0.459***	0.130***	-0.034***	-0.079***	0.057***	0.020***
	[0.012]	[0.019]	[0.007]	[0.005]	[0.005]	[0.005]	[0.002]
Year 2012	0.026**	–	–	-0.015***	0.010**	-0.008*	0.013***
	[0.011]			[0.005]	[0.005]	[0.005]	[0.002]
Annual HH income: ≤$15,000	–	-0.310***	-0.400***	0.249***	0.285***	0.288***	-0.004
		[0.049]	[0.021]	[0.015]	[0.013]	[0.014]	[0.007]
" : $15,000-$25,000	–	-0.132***	-0.355***	0.152***	0.200***	0.242***	-0.005
		[0.041]	[0.016]	[0.012]	[0.011]	[0.012]	[0.006]
" : $25,000-$35,000	–	-0.071*	-0.278***	0.083***	0.159***	0.193***	0.001
		[0.038]	[0.014]	[0.012]	[0.010]	[0.011]	[0.005]
" : $35,000-$50,000	–	-0.01	-0.221***	0.051***	0.110***	0.156***	0.013***
		[0.034]	[0.012]	[0.010]	[0.009]	[0.010]	[0.004]
" : $50,000-$75,000	–	0.053	-0.158***	0.011	0.069***	0.102***	0.019***
		[0.034]	[0.012]	[0.010]	[0.010]	[0.010]	[0.004]
" : $75,000-$100,000	–	0.085**	-0.101***	-0.005	0.048***	0.083***	0.016***
		[0.035]	[0.013]	[0.011]	[0.010]	[0.010]	[0.004]
" : $100,000-$150,000	–	0.015	-0.070***	-0.030***	0.017*	0.061***	0.011***
		[0.035]	[0.013]	[0.011]	[0.010]	[0.010]	[0.004]
" : ≥$150,000	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
State FE	+	+	+	+	+	+	+
No. of observations	40,641	18,517	18,517	40,641	40,641	40,641	40,641
Pseudo R2	0.160	0.026	0.262	0.043	0.164	0.150	0.063
Log-likelihood	-68,642.6	-33,790.8	-9,504.7	-25,998.8	-21,267.0	-22,676.7	-6,515.3
Wald $\chi 2$	19,186.1***	1,539.7***	4,557.1***	2,178***	6,713.6***	6,442.1***	796.2***

Notes: * p<0.10, ** p<0.05, *** p<0.01

Table 6

Financial performance and the interaction between entrepreneurship and financial literacy

	Annual household income	*Over-indebted*	*Financially constrained*	*Savings*	*Emergency funds*	*Retirement plan*	*Bankruptcy*
Panel A: Financial literacy (3 questions: High literacy [2, 3])							
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
*%Effect [Entrepreneur*High FL]*	*21.76%*	*-23.99%*	*-19.74%*	*0.65%*	*14.41%*	*10.32%*	*-65.50%*
*%Effect [Entrepreneur*Low FL]*	*11.48%*	*-20.25%*	*-16.27%*	*1.63%*	*13.21%*	*-2.00%*	*66.22%*
Predicted probability	*0.0528*	*0.2459*	*0.4786*	*0.4029*	*0.3264*	*0.3763*	*0.0415*
Entrepreneur*High financial literacy	0.146***	-0.198***	-0.094***	0.003	0.047***	0.039***	-0.027***
	[0.027]	[0.041]	[0.017]	[0.012]	[0.010]	[0.011]	[0.006]
Entrepreneur*Low financial literacy	0.077	-0.167**	-0.078***	0.007	0.043**	-0.008	0.027***
	[0.058]	[0.073]	[0.029]	[0.024]	[0.021]	[0.022]	[0.007]
Non-entrepreneur	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
No. of Observations	*40,641*	*18,517*	*18,517*	*40,641*	*40,641*	*40,641*	*40,641*
Panel B: Financial literacy (5 questions: High literacy [4, 5])							
	(8)	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**
*%Effect [Entrepreneur*High FL]*	*25.90%*	*-26.56%*	*-17.74%*	*1.14%*	*10.41%*	*13.73%*	*-71.09%*
*%Effect [Entrepreneur*Low FL]*	*11.96%*	*-19.18%*	*-19.78%*	*0.49%*	*18.96%*	*0.55%*	*17.41%*
Predicted probability	*0.0528*	*0.2459*	*0.4786*	*0.4029*	*0.3265*	*0.3763*	*0.0415*
Entrepreneur*High financial literacy	0.174***	-0.219***	-0.085***	0.005	0.034***	0.052***	-0.029***
	[0.031]	[0.048]	[0.021]	[0.014]	[0.012]	[0.013]	[0.008]
Entrepreneur*Low financial literacy	0.081**	-0.158***	-0.095***	0.002	0.062***	0.002	0.007
	[0.039]	[0.052]	[0.021]	[0.016]	[0.014]	[0.015]	[0.006]
Non-entrepreneur	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
No. of Observations	*40,641*	*18,517*	*18,517*	*40,641*	*40,641*	*40,641*	*40,641*
Panel C: Financial literacy (3 questions / Dependent variable: Self-employment)							
	(15)	**(16)**	**(17)**	**(18)**	**(19)**	**(20)**	**(21)**
*%Effect [Entrepreneur*High FL]*	*10.59%*	*-21.46%*	*47.86%*	*40.29%*	*32.65%*	*37.63%*	*4.15%*
*%Effect [Entrepreneur*Low FL]*	*-5.95%*	*-21.43%*	*-6.48%*	*-0.18%*	*4.19%*	*2.74%*	*-1.53%*
Predicted probability	*0.0528*	*0.2459*	*-0.0436*	*0.0119*	*0.0441*	*-0.0222*	*0.0281*
Entrepreneur*High financial literacy	0.071***	-0.177***	-0.065***	-0.002	0.042***	0.027***	-0.015***
	[0.022]	[0.035]	[0.014]	[0.010]	[0.008]	[0.009]	[0.005]
Entrepreneur*Low financial literacy	-0.040	-0.177***	-0.044**	0.012	0.044***	-0.022	0.028***
	[0.040]	[0.050]	[0.020]	[0.016]	[0.014]	[0.015]	[0.005]
Non-entrepreneur	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
No. of Observations	*40,641*	*18,517*	*18,517*	*40,641*	*40,641*	*40,641*	*40,641*

Notes:

Appendix Table A1
Weighted pairwise correlation matrix

	(1) Entrepreneur	(2) FL: #correct	(3) Male	(4) Age: 6 cat.	(5) Educ.: 5 cat.	(8) Partner Entr.	(9) Home owner	(10) Income: 8 cat.	(12) Indebted: 7 cat.	(13) Savings	(14) Rainy-day funds	(15) College funds	(16) Difficulty	(17) Retirement planning 1	(18) Retirement planning 2	(20) Bankruptcy last 2 years	(21) Math. ability	(22) %High-school per county	(23) %Unemployed per county	(24) Social capital
1) Entrepreneur	1.00																			
2) FL: #correct	0.09*	1.00																		
3) Male	0.06*	0.22*	1.00																	
4) Age: 6 cat.	0.08*	0.22*	0.02*	1.00																
5) Education: 5 cat.	0.05*	0.37*	0.07*	0.09*	1.00															
6) Single	-0.03*	-0.15*	0.07*	-0.38*	-0.07*															
7) # f.d. children	-0.02*	-0.02*	-0.08*	-0.11*	-0.02*															
8) Partner entrep.	0.23*	0.05*	-0.05*	0.06*	0.03*	1.00														
9) Home owner	0.09*	0.26*	0.01*	0.30*	0.20*	0.10*	1.00													
10) Income: 8 cat.	0.08*	0.37*	0.08*	0.20*	0.44*	0.10*	0.45*	1.00												
11) Fin. satisfaction	0.03*	0.08*	0.08*	0.00	0.18*	0.02*	0.22*	0.34*												
12) Indebted: 7 cat.	-0.04*	-0.06*	-0.04*	-0.03*	-0.05*	-0.01*	-0.07*	-0.12*	1.00											
13) Savings	0.02*	0.12*	0.04*	0.05*	0.12*	0.02*	0.11*	0.18*	-0.23*	1.00										
14) Rainy-day funds	0.07*	0.21*	0.09*	0.09*	0.24*	0.04*	0.25*	0.34*	-0.35*	0.31*	1.00									
15) College funds	0.01*	0.09*	0.02*	-0.06*	0.16*	0.04*	0.16*	0.26*	-0.06*	0.09*	0.20*	1.00								
16) Difficulty	-0.03*	-0.15*	-0.08*	-0.05*	-0.20*	-0.02*	-0.18*	-0.35*	0.40*	-0.28*	-0.43*	-0.11*	1.00							
17) Retirement 1	-0.04*	0.29*	0.03*	0.16*	0.31*	-0.03*	0.33*	0.51*	-0.04*	0.11*	0.23*	0.18*	-0.19*	1.00						
18) Retirement 2	0.07*	0.29*	0.08*	0.15*	0.26*	0.05*	0.23*	0.34*	-0.08*	0.13*	0.26*	0.14*	-0.15*	0.30*	1.00					
19) Income shock	0.04*	-0.06*	-0.04*	-0.01*	-0.11*	0.03*	-0.08*	-0.19*	0.21*	-0.08*	-0.16*	-0.06*	0.33*	-0.14*	-0.01*					
20) Bankruptcy	0.00	-0.08*	0.00	-0.01*	-0.02*	0.00	-0.02*	-0.02*	0.03*	-0.04*	-0.05*	0.00	0.04*	-0.02*	-0.01*	1.00				
21) Math. ability	0.05*	0.30*	0.14*	0.08*	0.19*	0.01*	0.11*	0.18*	-0.01*	0.07*	0.12*	0.06*	-0.11*	0.13*	0.14*	-0.04*	1.00			
22) %High-school pc	0.00	0.12*	0.02*	0.03*	0.12*	0.00*	0.05*	0.14*	-0.02*	0.02*	0.06*	0.03*	-0.06*	0.10*	0.07*	-0.02*	0.03*	1.00		
23) %Unemployed pc	0.00	-0.06*	-0.01*	-0.02*	-0.06*	0.00	-0.03*	-0.06*	0.02*	0.00	-0.04*	-0.02*	0.05*	-0.06*	-0.03*	0.02*	-0.01*	-0.51*	1.00	
24) Soc. capital index	0.00	0.03*	-0.01*	0.03*	0.07*	0.00	0.01*	0.02*	-0.02*	0.00	0.02*	0.00	-0.01*	0.03*	0.02*	-0.02*	0.00	0.37*	-0.26*	1.00

Notes:

Appendix Table A2

First-stage regressions for IV probit and Heckman ordered probit models

	(1)		(2)		(3)	
	EFLIVI		**EFLIVI**		**AHI**	
Dependent variable:	Financial literacy		Financial literacy		Entrepreneurship	
	-		-		0.008***	[0.001]
Male	0.497***	[0.013]	0.473***	[0.013]	0.030***	[0.002]
Age: 25-34	0.038	[0.025]	0.011	[0.025]	-0.014***	[0.005]
Age: 35-44	0.255***	[0.025]	0.210***	[0.025]	0.002	[0.004]
Age: 45-54	0.374***	[0.024]	0.337***	[0.024]	0.004	[0.004]
Age: 55-64	0.430***	[0.027]	0.401***	[0.026]	0.005	[0.005]
White	0.307***	[0.018]	0.282***	[0.018]	0.005*	[0.003]
Educ.: postgraduate	1.359***	[0.034]	1.081***	[0.036]	0.016**	[0.007]
Educ.: completed bachelors	1.118***	[0.032]	0.915***	[0.033]	0.021***	[0.007]
Educ.: incomplete university	0.792***	[0.031]	0.651***	[0.032]	0.018***	[0.007]
Educ.: completed high-school	0.346***	[0.031]	0.255***	[0.031]	0.010	[0.007]
Married	0.152***	[0.018]	0.034*	[0.019]	-0.014***	[0.003]
Widowed/Divorced/Separated	0.083***	[0.022]	0.092***	[0.022]	0.007*	[0.004]
No. financially-dependent children	-0.025***	[0.006]	-0.030***	[0.006]	-0.003**	[0.001]
Partner entrepreneur	0.104***	[0.028]	0.089***	[0.027]	0.111***	[0.004]
Homeowner	0.180***	[0.021]	0.109***	[0.021]	0.037***	[0.003]
Real-estate owner	0.142***	[0.019]	0.066***	[0.019]	0.045***	[0.003]
Home mortgage	0.206***	[0.019]	0.143***	[0.019]	-0.020***	[0.003]
Year 2012	-0.130***	[0.013]	-0.143***	[0.013]	0.006**	[0.002]
Income: >$150,000	-		0.748***	[0.037]	-	
Income: $100,000-$150,000	-		0.685***	[0.032]	-	
Income: $75,000-$100,000	-		0.612***	[0.030]	-	
Income: $50,000-$75,000	-		0.484***	[0.027]	-	
Income: $35,000-$50,000	-		0.348***	[0.027]	-	
Income: $25,000-$35,000	-		0.220***	[0.028]	-	
Income: $15,000-$25,000	-		0.168***	[0.027]	-	
Mathematics-ability [1-7]	0.170***	[0.004]	0.163***	[0.004]	-	
% ≥high-school education at county	0.013***	[0.002]	0.010***	[0.001]	-	
Social-capital index	-		-		0.006***	[0.001]
Log(county unemployment)	-		-		0.015***	[0.005]
Test for joint significance: 1st stage	1,711.6***		1,556.1***		20.27***	
Test for joint significance: 2nd stage*	0.08		3.92		3.56	
No. of Observations	40,641		40,641		40,641	

Notes: Models (1) and (2) are first-stage financial-literacy regressions from IV Probit models. Their second-stage regressions for entrepreneurship are shown in Column ... and Column 7 of Table 4. Model (3) is a first-stage entrepreneurship regression from a Heckman Ordered Probit model. Its second-stage regression is shown in Column 1 of Table 6.

Appendix Table A3

International comparison: Financial literacy (#correct responses) by labour market status

	(1) **Bosnia & Herzegovina**	(2) **Bulgaria**	(3) **Azerbaijan**	(4) **Romania**	(5) **Russia**		(6) **United Kingdom***
Entrepreneur	3.97	3.15	3.37	3.41	2.80	Entrepreneur	2.18
Employed	3.80	2.96	3.68	3.18	2.71	Private sector employee	2.05
Unemployed	3.37	1.68	3.66	2.22	2.00	Public sector employee	2.02
Pensioner	2.83	1.68	2.58	1.56	1.70	Third Sector employee	1.99
Other	3.36	2.19	3.20	1.07	2.67	Other occupation	1.52
						No occupation	1.59
t-test [E vs. rest]	1.86*	5.45***	0.57	6.06***	1.70*		3.94***

Notes: Data for Bosnia & Herzegovina (2011), Bulgaria (2010), Azerbaijan (2009), Romania (2010) and Russia (2009) are averages from six financial literacy questions in the World Bank financial-literacy surveys. Data for the United Kingdom are weighted averages from three financial literacy questions in the 2014 British Election Survey. The labour market categories for the United Kingdom are in a different format, as they stem from a question on last know labour market status. The averages are from authors' own computations.

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