Financial Literacy, Inclusion and Preparedness: Evidence from Russia

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Workshop:

Financial Literacy around the World (FLat World)

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- **Informed financial decisions** critical to **sound personal finance** (Lusardi & Tufano, 2008; Lusardi, 2009; Bernheim, 1995; Lusardi & Mitchell, 2006; 2007a; 2007b; and 2008a; Cole & Shastry, 2008)
  - More efficient ***allocation*** of financial ***resources ,***
  - Greater financial ***stability***, less ***fragility*** (*e.g.* loan losses)
  - Personal finance and ***retirement planning decisions*** (*e.g.*; *inter alia*)
  - ***Stock market*** participation (van Rooijk, *et al.*, 2007)
  - Higher-cost ***transaction manners*** (interest rates, fees, *etc.*)
  - Demand for ***banking services*** in Indonesia (Cole, *et al.*, 2008)
  - ***Overindebtedness***; inability to ***assess*** levels of debt
  - ***Returns*** to long-term saving (Stango & Zinman, 2008)
  - Increased ***saving rates*** & ***lending*** to poorest & vulnerable (Cole & Zia, 2010)
  - Overconfidence (OECD, 2005; Lusardi & Tufano, 2008)
- Consistent evidence from ***several countries***: US, UK, Australia, Italy, Netherlands, Japan, Korea, Mexico, Indonesia, *inter alia*
  - Chistelis, *et al.*, 2005; ANZ Banking Group, 2003; Cercasi, *et al*., 2008; van Rooij, *et al*., 2008; OECD, 2005; Hastings & Tejeda-Ashton, 2008
- Financial illiteracy more severe for key ***demographic groups***, *i.e.* baby boomers, females, less educated, low income, minorities *etc*. (Lusardi & Mitchell, 2006; 2007a; 2008a)

The Russian case

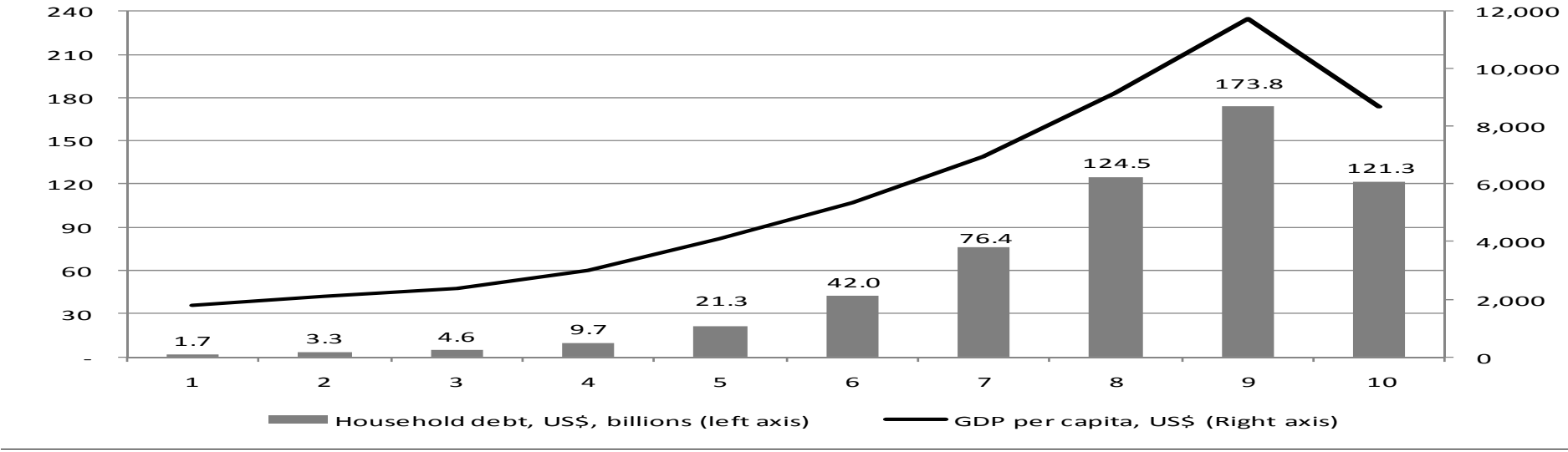
- Unique context of the Russian economy
  - Large urban-rural ***inequalities*** and gender pay ***gaps*** (Blau, 2003; *inter alia*)
  - High household ***savings*** rates, ***U-shaped*** in age due to the low and decreasing life expectancies of middle-aged men (Gregory *et al.*, 1999)
  - Widespread ***perception*** of ubiquitous economic ***unfairness*** among the **young**, and ***lack of trust*** in the rule of law & institutions (Gächter & Herrman, 2006)

- Fear that **financial education** & **basic financial literacy** is lagging behind
  - No family priors or formal financial education for the ***young***
  - Consumer debt was almost non-existent before 2001, but growing fast (10% of GDP in 2008 vs. <1% in 2003)
  - "This is likely the first financial crisis that most Russians are experiencing as borrowers"

  - Given current events can give rise to a dangerous mix
    - Bad consumer loans increased from US $3.5 billion (2006) to over US $5.8 billion (2007)
    - Share of non-performing loans climbed to 20% by the end of 2009
    - Moody's predicted that Russian banks may need about US $41.5 billion in recapitalization

Figure 2

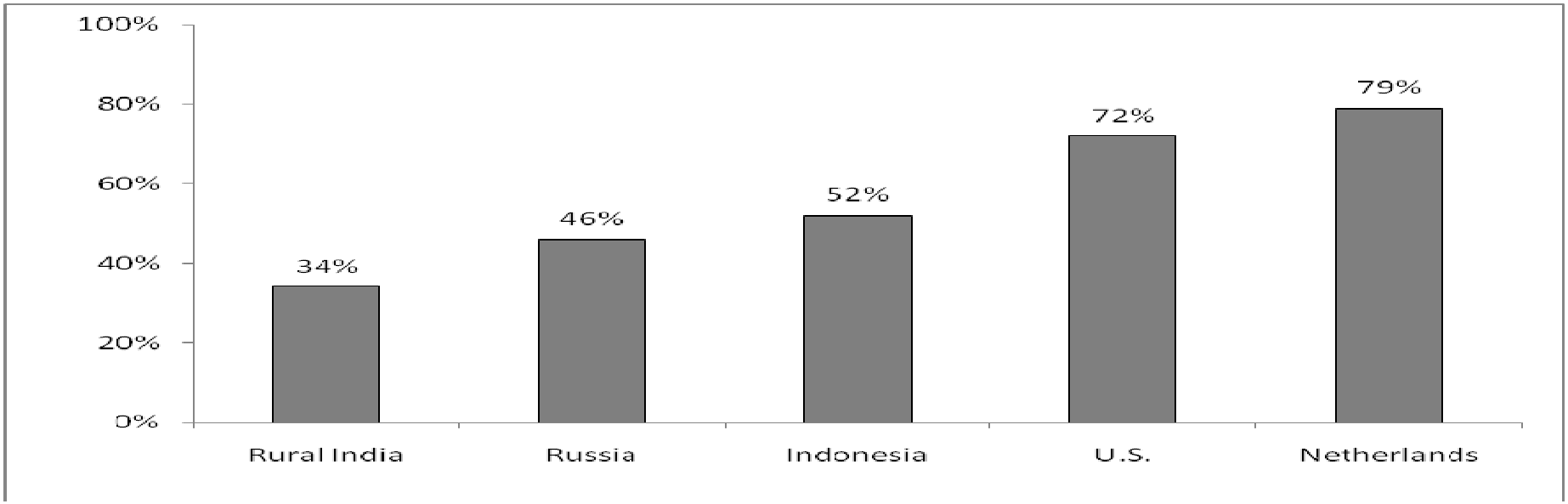
Russian Household Debt (US$, billions) and Per Capita Income (US$)



Source: WB-WDI Statistics (2010)

Figure 1

Financial Literacy, % of individuals answering correctly



Source: Cole, et al. (2009); the authors; Cole, et al. (2008); Lusardi and Mitchell (2007a); van Rooij, et al. (2008), respectively.

- In this unique context, our survey was designed to measure the extent to which Russian consumers are fully aware of their ***financial obligations***, and able to ***plan financially*** for the future

- Some novel questions:
- What is the level of financial literacy in a country ***without*** a ***legacy*** of consumer credit or a ***precedent*** of financial education?
- In a country with such pronounced regional ***inequalities*** and gender ***gaps***, are there significant differences between such population segments with respect to financial literacy?
- Are higher levels of financial literacy related to ***retirement*** and ***life insurance planning***?
- Is financial literacy linked to the use of different types of ***financial services***?
- Can it explain high levels of ***debt*** and ***consumption inadequacy***?

The Russian diagnostic financial literacy survey

- 2 waves of surveys collected face-to-face in 2008 (1,600 individuals) and 2009 (1,240 individuals)
  - The sample is nationally representative and weighted by gender, age, education, and seven federal regions
  - Rich demographic and socioeconomic information
  - Insight into financial literacy local financial penetration, vulnerability, and financial planning

- Our analysis is based on the **2008** wave, and also utilises some selected information for the panel respondents from ***2009***

- 43.8% male, 74% of working age (<55)
- 11% live alone, 23% in households of 2, and 66% in households with >3
- 28.6% in urban regions (settlements with a population greater than 500,000)
- 52.5% are employees (both skilled and unskilled), while 25.5% are retired
- 2.8% 'entrepreneurs' or self-employed, 0.9% unemployed, 18.3% in other categories, *e.g.* students, enlisted personnel *etc*.
- Relatively highly educated: 8.4% with less than a secondary education; 29.9% secondary school; 38.4% special vocational/ technical school; and 23.4% have initiated or completed their higher education

Financial Literacy Questions and Index

- At least four financial literacy questions, covering ***interest*** (calculation and compounding), ***inflation***, and ***sales discounts***
  - 4 of the 5 broad dimensions of financial literacy identified in van Rooij, Lusardi, and Alessie (2007): (no money illusion)

- We construct a continuous index of financial literacy using ***Principal Component Analysis***
  - Binary variable to identify the correct response, and PCA based on polychoric correlations (Kolenikov and Angeles, 2004).
  - Measure robust to alternative computation techniques (different treatment of "Difficulty Answering Question" responses)
  - For robustness, we also use the #correct responses and self-assessed financial literacy

Table 2

Summary Statistics of Financial Literacy Questions, 2008 Survey

Panel A: Summary Statistics

Variable	Definition	Correct	Incorrect	"Don't' Know"
Interest_1	Let's assume that you deposited 100,000 rubles in a bank account for 5 years at 10% interest rate. The interest will be earned at the end of each year and will be added to the principal. How much money will you have in your account in 5 years if you do not withdraw either the principal or the interest	41.43%	31.19%	27.37%
Interest_2	Let's assume that you took a bank credit of 10,000 rubles to be paid back during a year in equal monthly payments. The credit charge is 600 rubles. Give a rough estimate of the annual interest rate on your credit.	23.37%	28.31%	48.32%
Inflation	Let's assume that in 2010 your income is twice as now, and the consumer prices also grow twofold. Do you think that in 2010 you will be able to buy more, less, or the same amount of goods and services as today?	45.62%	31.47%	22.91%
Discounts	Let's assume that you saw a TV-set of the same model on sales in two different shops. The initial retail price of it was 10,000 rubles. One shop offered a discount of 1,500 rubles, while the other one offered a 10% discount. Which one is a better bargain – a discount of 1,500 rubles or 10%?	69.55%	9.12%	21.32%

Panel B: Distribution of the Number of Responses

Percent of Individuals with Indicated Responses (out of four questions)

	0	1	2	3	4
Correct Response	18.25	21.23	31.38	20.58	8.57
Incorrect Response	38.27	31.66	22.91	6.05	1.12
Difficulty Answering	43.67	24.95	12.01	6.52	12.85

Retirement Planning and Life Insurance

- **Q14 (2009): What funds will you live on after you reach retirement age? (Can answer more than 1)**

  1 = Pension that you will receive from a publicly owned retirement fund
  2 = Your own earnings (I will continue work after a retirement)
  3 = Income from leasing and selling property
  4 = Support from children, relatives, acquaintances
  5 = Additional pension or financial aid from an enterprise where you have been working
  6 = Your own savings
  7 = Support from church and charitable organizations
  8 = Pension that you will receive from a privately owned retirement fund
  9 = Other

- **Q16 (2008): What phrase out of the ones given below describes best your individual life insurance situation?**

  1 = I don't need life insurance actually
  2 = I need to insure my life but I don't believe that insurance companies will pay the claim in case of my death
  3 = I need to insure my life but it is too expensive
  4 = My life is insured for some amount but the level is lower than what I believe is necessary
  5 = My life is already insured for the required amount

Credit, Debt and Consumption Adequacy

- **Formal and Informal Credit**
- **Q10 (2009): When answering the nest question please exclude any loans for purchase of an apartment, or dacha, or car secured on property out of your entire debt amount. Is it possible to say, that the total debt excluding the above loans will equal the amount:**
  - The categories have been regrouped into: 1="No Debt"; 2="0-3 salaries"; 3="3-6 salaries"; 4="6-12 salaries"; 5="> 1 year's salaries"
- **Q51 (2009): Which of the following groups of people do you think you belong to?**

1 = We can afford quite expensive things – apartment, dacha, and many others

2 = We have no trouble buying durable goods, but purchase of a really expensive thing like a car is hard for us

3 = We have enough money to buy food and clothes. But purchase of durable goods (TV, refrigerator) is problematic

4 = We have enough money to buy food but buying clothes causes financial difficulties

5 = We hardly make the ends meet. We do not have enough money even for food

Figure 5
Categorical variables

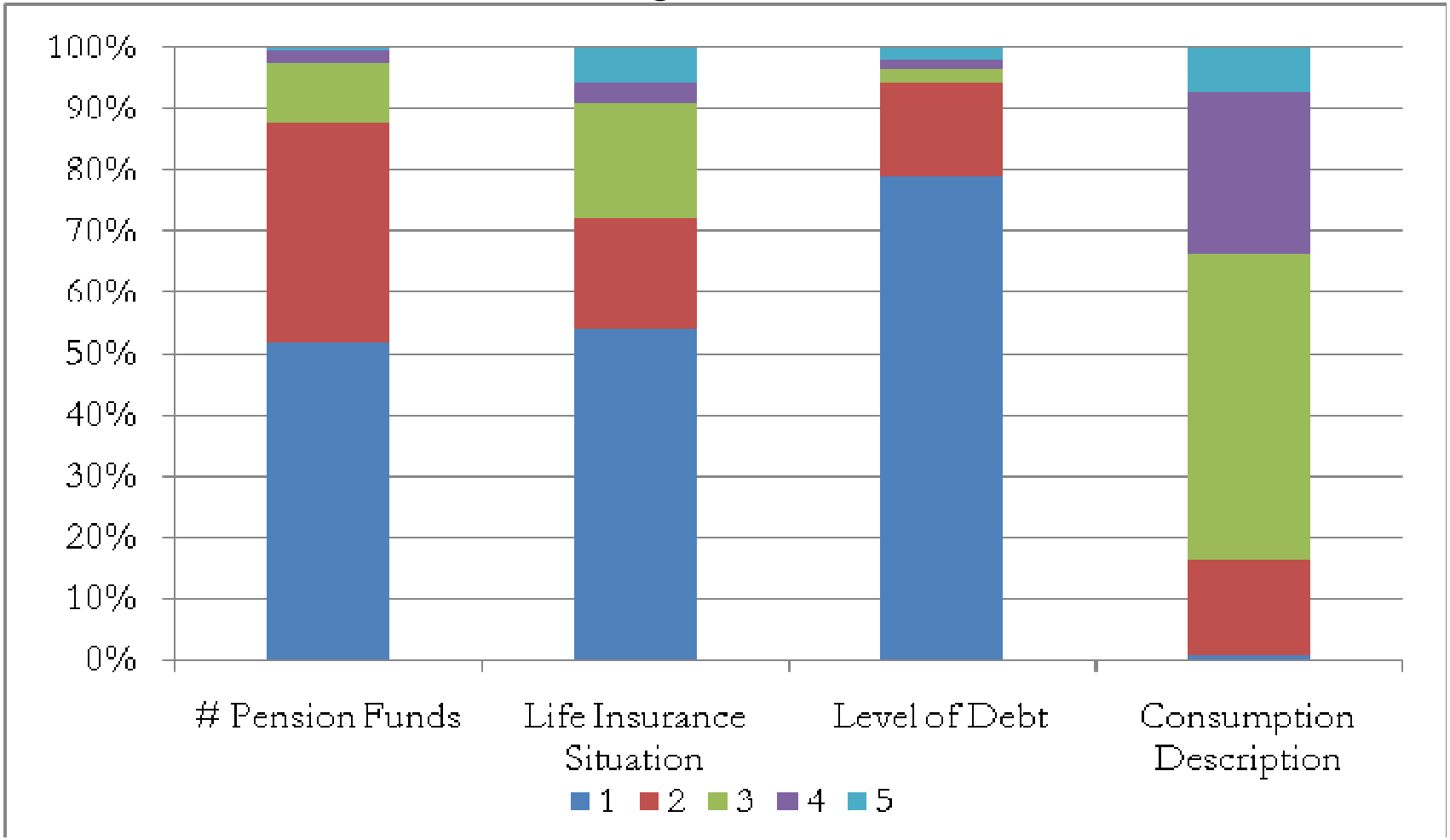
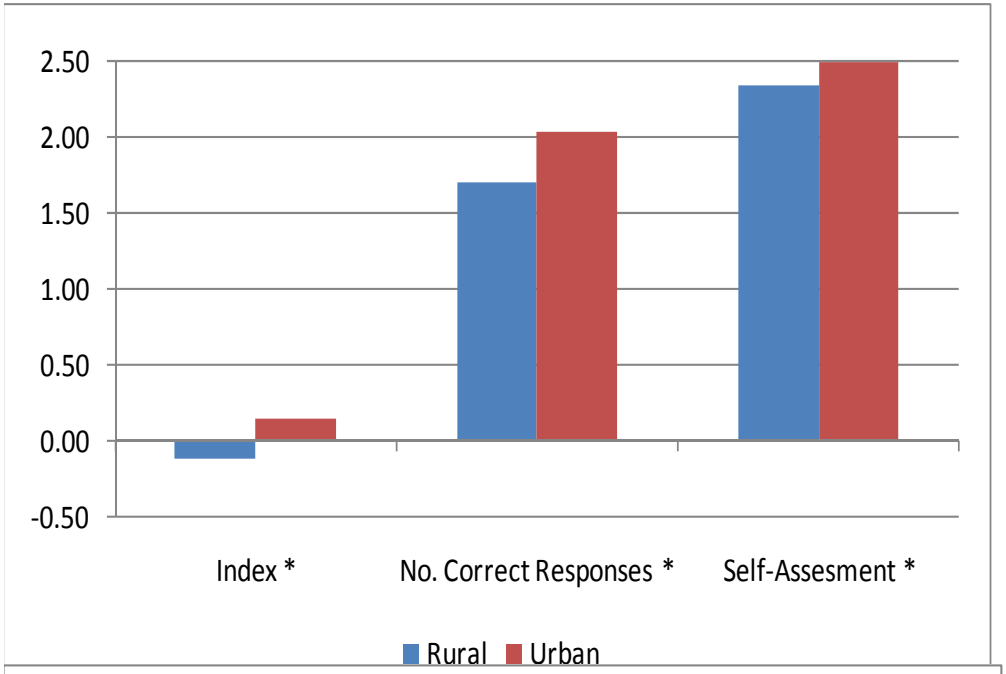
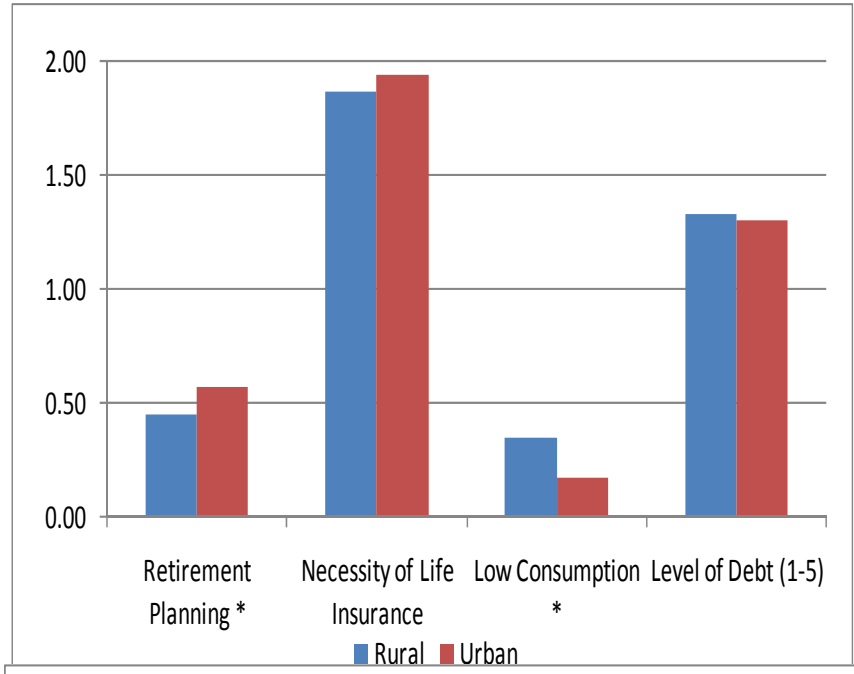
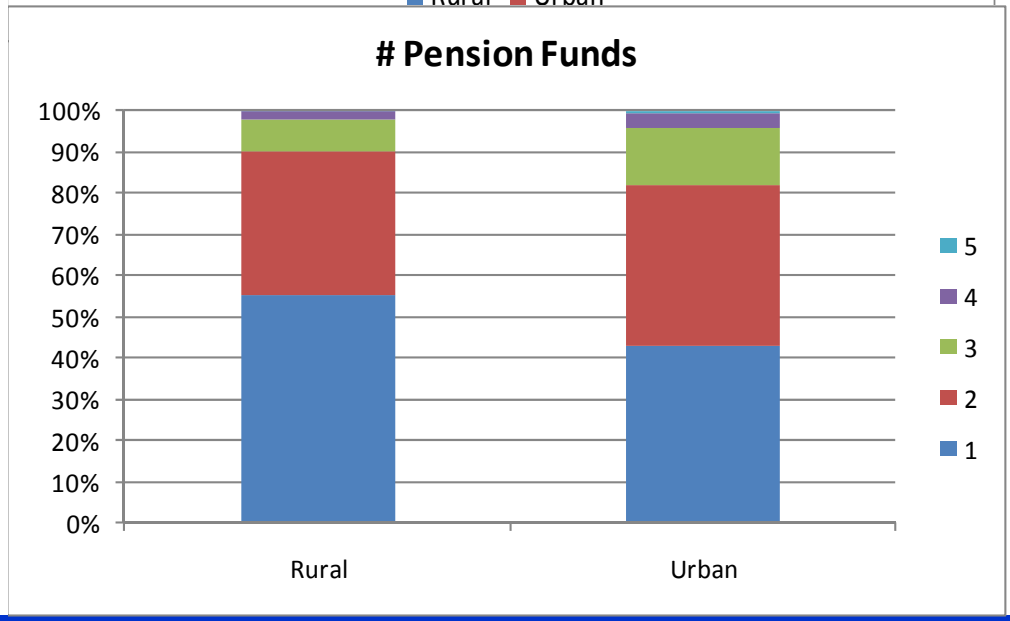
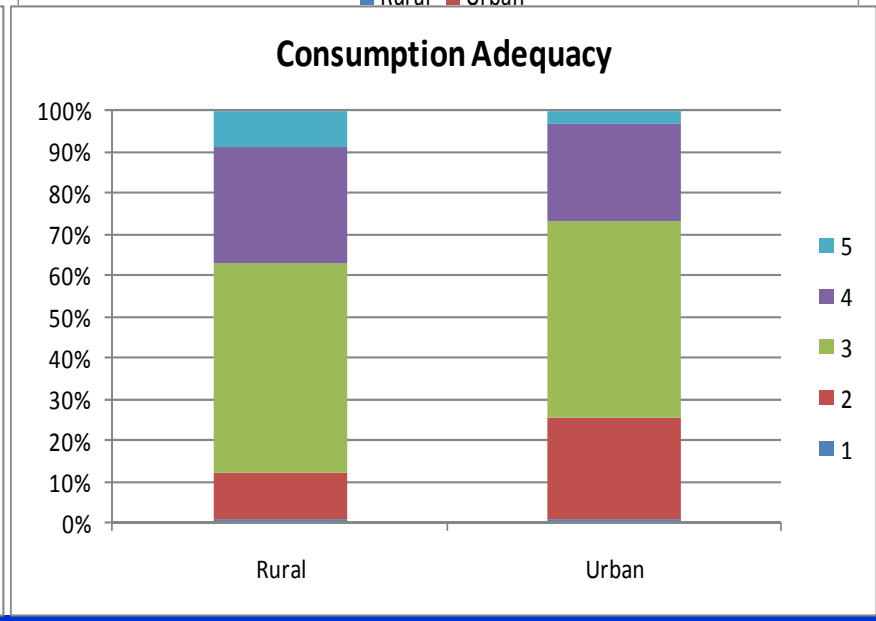


Figure 6
Rural-Urban Comparisons









Who are the Financially Literate in Russia?

Summary Statistics:

- More likely to be ***male***, not living alone, ***younger***, and residents of ***urban*** regions
- More likely to have vocational/technical or some level of higher education
- Skilled or non-manual occupations
- Pensioners less likely
- Individuals in the lowest income quartile are more likely to score low in terms of their financial literacy, while those in the highest income quartile are more likely to be highly financially literate
- Significant positive association between financial literacy and retirement and life insurance planning
- More likely to have formal credit, less likely to have informal and high levels of debt (although differences insignificant at conventional levels)
- Less likely to experience consumption inadequacy

Table 1

Summary statistics

	(A)	(B) Fin. Literacy Index		(C) Region		(D) Gender	
		≥median	<median				
	Pooled	High	Low	Rural	Urban	Female	Male
#Obs.	*1074*	*489*	*585*	*767*	*307*	*603*	*471*
Female	56.2%	53.0%	58.8%*	55.7%	57.3%	100.0%	0.0%
Urban region	28.6%	32.3%**	25.5%	0.0%	100.0%	29.2%	27.8%
Single Person Household	10.7%	8.0%	13.0%***	10.6%	11.1%	13.1%***	7.6%
Age	44.63	41.56	47.20***	45.24*	43.10	46.69***	41.99
Has experienced income shock in the last year	35.2%	31.9%	38.0%**	37.6%**	29.3%	34.7%	35.9%
Education:							
Primary or Incomplete	8.4%	4.7%	11.5%***	10.3%***	3.6%	9.3%	7.2%
Secondary	29.9%	25.0%	34.0%***	32.5%***	23.5%	25.5%	35.5%***
Vocational-Technical	38.4%	41.5%*	35.7%	37.2%	41.4%	39.6%	36.7%
Higher or incomplete higher	23.4%	28.8%***	18.8%	20.1%	31.6%***	25.5%*	20.6%
Occupation:							
Skilled Non-Manual	9.0%	11.3%**	7.2%	9.0%	9.1%	11.8%***	5.5%
Skilled Manual	26.9%	29.9%**	24.4%	25.3%	30.9%*	14.4%	42.9%***
Unskilled Non-Manual	13.5%	15.8%**	11.6%	11.6%	18.2%***	17.7%***	8.1%
Unskilled Manual	3.1%	2.9%	3.3%	4.0%***	0.7%	2.3%	4.0%
Entrepreneur	2.8%	3.9%**	1.9%	2.9%	2.6%	1.5%	4.5%***
Unemployed	0.9%	0.6%	1.2%	1.0%	0.7%	0.8%	1.1%
Pensioner	25.5%	17.2%	32.5%***	28.3%***	18.6%	31.5%***	17.8%
Other	18.3%	18.6%	18.0%	17.9%	19.2%	19.9%	16.1%
Family Income:							
- 1st Quartile - (lowest)	29.2%	21.7%	35.6%***	34.6%***	16.0%	33.0%***	24.4%
- 2nd Quartile -	23.0%	25.0%	21.4%	25.0%**	17.9%	23.7%	22.1%
- 3rd Quartile -	23.9%	24.3%	23.6%	22.0%	28.7%**	21.9%	26.5%*
- 4th Quartile - (highest)	23.8%	29.0%***	19.5%	18.4%	37.5%***	21.4%	27.0%**
Family Income	19,460.0	21,854.9***	17,458.1	17,158.1	25,211.1***	18,137.8	21,152.8***
Financial Behaviour:							
Retirement Planning	48.2%	55.2%***	42.4%	44.7%	57.0%***	48.9%	47.4%
Number of retirement funds	1.64	1.74***	1.55	1.57	1.80***	1.64	1.63
Life Insurance necessity (0-1)	46.1%	51.1%***	41.9%	44.7%	49.5%	48.4%*	43.1%
Life Insurance necessity (1:high-3:low)	1.89	2.00***	1.79	1.87	1.94	1.93	1.84
Bank Account	35.0%	35.2%	34.9%	33.1%	39.7%**	34.8%	35.2%
Formal Credit	17.7%	18.2%	17.3%	17.9%	17.3%	17.1%	18.5%
Informal Credit	12.9%	12.5%	13.3%	14.5%**	9.1%	12.6%	13.4%
Level of Debt (1-5)	1.32	1.31	1.33	1.33	1.30	1.34	1.31
Low Consumption (0-1)	30.1%	22.3%	36.6%***	35.1%***	17.6%	33.5%***	25.7%
Consumption Inadequacy (1-5)	3.25	3.14	3.34***	3.33***	3.04	3.28*	3.20
Financial Literacy: Index	-0.04	0.81***	-0.75	-0.12	0.15***	-0.08	0.01
Fin. Literacy: #Correct Responses	1.80	2.83***	0.94	1.71	2.04***	1.75	1.86
Fin. Literacy: Self-Assessment	2.39	2.65***	2.16	2.35	2.49**	2.32	2.47**

Does Financial Literacy Matter?

Empirical strategy:

- Using **2008 values** of the independent variables to assess their impact on ***2009 financial outcomes***
  - Only exception: "life insurance necessity perception" (only 2008 available)

Dependent variables:

(a) **Retirement planning**: 1/0 (probit); #of funding sources (1-5: poisson)

(b) **Life insurance**: 1/0: necessity perception (probit); categorical: (1) purchase; (2) necessity; (3) else (multinomial probit)

(c) **Credit**: 1/0: ***formal***; 1/0: ***informal*** (probits); ***level of debt*** in salaries (1-5: ordered probit)

(d) **Consumption inadequacy**: 1/0 (probit); ordinal (1-5: ordered probit)

Financial Literacy:

(a) Index (continuous); (b) # Correct responses (0-4); (c) Self Assessment (1-5)

Robustness:

IV methods (probit and GMM)

Financial Preparedness and Planning

Retirement Planning:

- ***Rural*** area residents are significantly less likely to have >1 alternatives planned
- The magnitude of the effect is large, *i.e.* in the order of ***15%***
- The ***older*** and the ***wealthier*** are more likely to plan a number of alternatives
- All ***3 financial literacy measures*** exert a moderate positive impact on retirement planning
- Statistically significant at the 5% level and a ***7-9% effect***
- Poisson estimates ***confirm*** the significant positive association between financial literacy and the number of pension funds an individual is affiliated with (all other effects robust)

Life Insurance:

- Very large and significant ***positive*** relationship between financial literacy and the willingness to purchase life insurance
  - All 3 measures significant at the 1% level, and ***13.3%-18.6%*** effects
- Multinomial probit models show ***similar effects*** of financial literacy on those who already purchased it and those who want to but can not
- ***Females*** are more likely to consider life insurance necessary, but also more likely to be ***unable*** to purchase it either due to financial constraints or due to distrust in the system

Table 3

Retirement Planning

	(A) > one funds to live on after retirement Probit: Marginal Effects				(B) # Pension Funds (1-5) Poisson Model: Coefficients			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Financial Literacy Index	-	0.043**	-	-	-	0.036**	-	-
		[0.017]				[0.015]		
Fin. Lit.: # Correct Responses	-	-	0.034**	-	-	-	0.028**	-
			[0.014]				[0.012]	
Fin. Lit.: Self-Assessment	-	-	-	0.037**	-	-	-	0.035**
				[0.018]				[0.016]
Rural Region	-0.075**	-0.069*	-0.069*	-0.079**	-0.087***	-0.082**	-0.082**	-0.087***
	[0.036]	[0.036]	[0.036]	[0.036]	[0.032]	[0.032]	[0.032]	[0.033]
Female	0.030	0.032	0.032	0.028	0.028	0.030	0.030	0.026
	[0.034]	[0.034]	[0.034]	[0.035]	[0.031]	[0.031]	[0.031]	[0.032]
Single Person Household	-0.069	-0.066	-0.067	-0.068	-0.074	-0.072	-0.072	-0.065
	[0.054]	[0.054]	[0.054]	[0.055]	[0.048]	[0.048]	[0.048]	[0.049]
Log(Age)	0.104*	0.111**	0.111**	0.116**	0.004	0.01	0.009	0.019
	[0.055]	[0.055]	[0.055]	[0.057]	[0.053]	[0.053]	[0.053]	[0.053]
Has experienced income shock in the last year	-0.022	-0.019	-0.019	-0.026	0.018	0.021	0.021	0.008
	[0.033]	[0.033]	[0.033]	[0.034]	[0.032]	[0.032]	[0.032]	[0.032]
Education (Ref.:Primary or Incomplete)								
Secondary	-0.020	-0.023	-0.023	-0.041	0.012	0.008	0.008	0.001
	[0.063]	[0.063]	[0.063]	[0.065]	[0.051]	[0.051]	[0.051]	[0.052]
Vocational-Technical	0.016	0.006	0.006	-0.018	0.046	0.036	0.037	0.029
	[0.063]	[0.064]	[0.064]	[0.066]	[0.052]	[0.053]	[0.053]	[0.055]
Higher or incomplete higher	0.058	0.039	0.040	0.016	0.093	0.077	0.078	0.063
	[0.069]	[0.070]	[0.070]	[0.073]	[0.058]	[0.058]	[0.058]	[0.061]
Family Income (Ref.: - 1st - lowest)								
- 2nd -	0.033	0.031	0.032	0.001	0.026	0.024	0.024	0.003
	[0.047]	[0.047]	[0.047]	[0.048]	[0.041]	[0.041]	[0.041]	[0.042]
- 3rd -	0.061	0.062	0.062	0.038	0.039	0.039	0.038	0.022
	[0.048]	[0.048]	[0.048]	[0.049]	[0.043]	[0.043]	[0.043]	[0.044]
- 4th - (highest)	0.198***	0.194***	0.194***	0.182***	0.186***	0.182***	0.182***	0.170***
	[0.050]	[0.051]	[0.050]	[0.052]	[0.047]	[0.047]	[0.047]	[0.048]
Predicted Probability	0.4824	0.4822	0.4823	0.4824				
No. of Observations	1,074	1,074	1,074	1,033	1,074	1,074	1,074	1,033
Pseudo R^2	0.034	0.038	0.038	0.037	0.008	0.009	0.009	0.008

Table 4

Life Insurance

	(A) Life Insurance Necessary — Probit: Marginal Effects				(B) Life Insurance — Multinomial Probit Coefficients, (Base outcome: (c) Not necessary, does not pay)					
	(1)	(2)	(3)	(4)	(1)		(2)		(3)	
					(a) Pays for:	(b) Necessary, but not pay	(a) Pays for:	(b) Necessary, but not pay	(a) Pays for:	(b) Necessary, but not pay
Financial Literacy Index	-	0.061***	-	-	0.194**	0.204***	-	-	-	-
		[0.017]			[0.084]	[0.061]				
Fin. Lit.: # Correct Responses	-	-	0.049***	-	-	-	0.157**	0.160***	-	-
			[0.014]				[0.069]	[0.050]		
Fin. Lit.: Self-Assessment	-	-	-	0.086***	-	-	-	-	0.307***	0.280***
				[0.018]					[0.087]	[0.066]
Rural Region	-0.056	-0.046	-0.046	-0.052	-0.043	-0.198	-0.043	-0.199	-0.031	-0.224*
	[0.036]	[0.037]	[0.037]	[0.037]	[0.177]	[0.131]	[0.177]	[0.131]	[0.178]	[0.133]
Female	0.083**	0.087**	0.087**	0.095***	0.158	0.347***	0.158	0.347***	0.18	0.375***
	[0.034]	[0.034]	[0.034]	[0.035]	[0.162]	[0.125]	[0.162]	[0.125]	[0.167]	[0.128]
Single Person Household	-0.021	-0.017	-0.018	-0.044	-0.070	-0.062	-0.069	-0.062	-0.181	-0.146
	[0.055]	[0.055]	[0.055]	[0.056]	[0.285]	[0.201]	[0.284]	[0.201]	[0.297]	[0.204]
Log(Age)	-0.003	0.006	0.006	0.015	-0.423	0.171	-0.423	0.17	-0.421	0.208
	[0.055]	[0.055]	[0.055]	[0.057]	[0.260]	[0.200]	[0.260]	[0.200]	[0.266]	[0.204]
Has experienced income shock in the last year	0.154***	0.161***	0.161***	0.162***	0.381**	0.592***	0.379**	0.590***	0.402**	0.586***
	[0.033]	[0.033]	[0.033]	[0.034]	[0.155]	[0.121]	[0.155]	[0.121]	[0.158]	[0.124]
Family Income (Ref.: - 1st - lowest)										
- 2nd -	-0.052	-0.056	-0.056	-0.058	0.054	-0.263	0.055	-0.262	0.046	-0.271
	[0.047]	[0.047]	[0.047]	[0.048]	[0.222]	[0.173]	[0.222]	[0.173]	[0.229]	[0.178]
- 3rd -	-0.083*	-0.084*	-0.084*	-0.090*	-0.055	-0.356**	-0.055	-0.356**	-0.097	-0.371**
	[0.048]	[0.048]	[0.048]	[0.049]	[0.233]	[0.179]	[0.233]	[0.179]	[0.237]	[0.182]
- 4th - (highest)	-0.140***	-0.148***	-0.148***	-0.156***	-0.434*	-0.518***	-0.432*	-0.516***	-0.475*	-0.544***
	[0.050]	[0.050]	[0.050]	[0.051]	[0.247]	[0.192]	[0.247]	[0.192]	[0.250]	[0.197]
Predicted Probability	0.4587	0.4583	0.4584	0.4629	0.0824	0 .3708	0.0823	0.3708	0.0838	0.3734
No. of Observations	1,074	1,074	1,074	1,033	1,074		1,074		1,033	
Pseudo R^2	0.051	0.060	0.060	0.067						
Log-Likelihood	-703.2	-696.6	-697.0	-665.8	-929.5		-929.9		-893.4	
LR χ^2	71.68***	87.58***	86.96***	89.80***	110.17***		109.62***		113.12***	

Financial Inclusion and Indebtedness

- Financial literacy is significantly ***positively*** related to the likelihood of acquiring ***formal*** credit
  - ***24-39%*** depending on the measure used and given the overall predicted probability of the model
- Moderate ***negative*** effects of financial literacy on the likelihood of acquiring ***informal*** finance
  - The magnitude of the effects is in the order of ***10-14%***, but statistically significant at the 10% level
- ***Rural*** area residents are more likely to acquire ***both*** formal and informal finance, and females more likely to acquire formal finance than males
- The results from ordered probit models on a 5-scale debt level variable show a significant ***negative*** impact of financial literacy on the likelihood of having ***higher debt levels***

Table 5

Credit and Debt

	(A) Formal Credit Probit: Marginal Effects				(B) Informal Credit Probit: Marginal Effects				(C) Level of Debt (1-5) Ordered Probit: Coefficients			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Financial Literacy Index	-	0.039***	-	-	-	-0.016*	-	-	-	-0.121***		
		[0.012]				[0.009]				[0.045]		
Fin. Lit.: # Correct Responses	-	-	0.031***	-	-	-	-0.012*	-	-		-0.103***	
			[0.010]				[0.007]				[0.037]	
Fin. Lit.: Self-Assessment	-	-	-	0.063***	-	-	-	0.017	-			0.075
				[0.013]				[0.011]				[0.051]
Rural Region	0.066***	0.071***	0.071***	0.073***	0.045**	0.043**	0.043**	0.045**	0.097	0.077	0.076	0.103
	[0.024]	[0.024]	[0.024]	[0.024]	[0.021]	[0.021]	[0.021]	[0.021]	[0.100]	[0.101]	[0.101]	[0.102]
Female	0.049**	0.050**	0.050**	0.059**	0.005	0.003	0.004	0.012	0.230**	0.228**	0.229**	0.245**
	[0.024]	[0.024]	[0.024]	[0.025]	[0.021]	[0.021]	[0.021]	[0.022]	[0.096]	[0.095]	[0.095]	[0.098]
Single Person Household	0.007	0.009	0.009	0.022	0.106**	0.104**	0.104**	0.110**	0.372**	0.368**	0.368**	0.391**
	[0.043]	[0.044]	[0.044]	[0.047]	[0.046]	[0.046]	[0.046]	[0.048]	[0.153]	[0.152]	[0.153]	[0.155]
Log(Age)	-0.063	-0.055	-0.055	-0.049	-0.072**	-0.074**	-0.074**	-0.067*	-0.408***	-0.434***	-0.435***	-0.353**
	[0.039]	[0.039]	[0.039]	[0.040]	[0.034]	[0.035]	[0.035]	[0.035]	[0.147]	[0.149]	[0.149]	[0.150]
Has experienced income shock in the last year	-0.006	-0.003	-0.004	0.003	0.040*	0.038*	0.039*	0.048**	0.145	0.132	0.132	0.168*
	[0.024]	[0.024]	[0.024]	[0.025]	[0.022]	[0.022]	[0.022]	[0.023]	[0.094]	[0.094]	[0.094]	[0.095]
Education (Ref.: Primary or Incomplete)												
Secondary	-0.001	-0.006	-0.005	-0.028	0.088*	0.092*	0.091*	0.067	0.521**	0.542***	0.542***	0.475**
	[0.052]	[0.052]	[0.052]	[0.052]	[0.053]	[0.053]	[0.053]	[0.053]	[0.207]	[0.207]	[0.207]	[0.209]
Vocational-Technical	-0.017	-0.027	-0.027	-0.057	0.104**	0.110**	0.109**	0.081	0.520**	0.556***	0.555***	0.462**
	[0.051]	[0.051]	[0.051]	[0.052]	[0.050]	[0.050]	[0.050]	[0.050]	[0.209]	[0.210]	[0.210]	[0.212]
Higher or incomplete higher	0.029	0.010	0.010	-0.022	0.013	0.022	0.022	-0.01	0.348	0.406*	0.408*	0.272
	[0.059]	[0.056]	[0.056]	[0.055]	[0.051]	[0.051]	[0.051]	[0.048]	[0.222]	[0.224]	[0.224]	[0.228]
Family Income (Ref.: - 1st - lowest)												
- 2nd -	-0.007	-0.008	-0.008	-0.005	0.043	0.044	0.044	0.044	0.2	0.216*	0.217*	0.217
	[0.034]	[0.033]	[0.033]	[0.035]	[0.033]	[0.033]	[0.033]	[0.034]	[0.130]	[0.131]	[0.131]	[0.132]
- 3rd -	0.015	0.018	0.017	0.012	0.053	0.053	0.053	0.057*	0.037	0.042	0.043	0.033
	[0.036]	[0.036]	[0.036]	[0.037]	[0.033]	[0.033]	[0.033]	[0.035]	[0.134]	[0.133]	[0.133]	[0.136]
- 4th - (highest)	-0.044	-0.047	-0.047	-0.04	-0.005	-0.004	-0.004	-0.002	-0.01	0.007	0.007	0.003
	[0.034]	[0.033]	[0.033]	[0.035]	[0.033]	[0.033]	[0.033]	[0.034]	[0.145]	[0.144]	[0.144]	[0.147]
Predicted Probability	0.1626	0.1603	0.1604	0.1627	0.1151	0.1143	0.1144	0.1165				
No. of Observations	1074	1074	1074	1033	1074	1074	1074	1033	1022	1022	1022	984
Pseudo R^2	0.064	0.074	0.073	0.089	0.058	0.061	0.061	0.062	0.038	0.043	0.043	0.04
Log-Likelihood	-474.8	-469.9	-470	-454.8	-389.7	-388.6	-388.7	-377.6	-687.8	-684.6	-684.4	-673.3

Financial Vulnerability

- Residents in ***rural*** regions, the ***single*** and ***older*** individuals, as well as those on the ***lowest income quartiles*** are more likely to experience **consumption inadequacy**
- The ***financial literate*** are ***less likely*** to experience low consumption
  - ***10-11%*** effect, significant at the 10% level
- The significant ***negative*** relationship between financial literacy and consumption inadequacy is confirmed in the ordered probit model that utilises the entire information set
- The negative coefficient of rural area residence remains, verifying that rural households are less able to protect their food consumption from adverse conditions
  - A finding previously shown in the literature for Russia (Skoufias, 2003)

Table 6

Consumption

	(A) Low Consumption Probit: Marginal Effects				(B) Level of Low Consumption (1:High - 5: Low) Ordered Probit: Coefficients			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Financial Literacy Index	-	-0.028*	-	-	-	-0.062*	-	-
		[0.016]				[0.036]		
Fin. Lit.: # Correct Responses	-	-	-0.024*	-	-	-	-0.053*	-
			[0.013]				[0.029]	
Fin. Lit.: Self-Assessment	-	-	-	-0.025*	-	-	-	-0.063*
				[0.015]				[0.038]
Rural Region	0.096***	0.092***	0.092***	0.100***	0.217***	0.208***	0.207***	0.199**
	[0.032]	[0.032]	[0.032]	[0.032]	[0.076]	[0.076]	[0.076]	[0.078]
Female	0.027	0.026	0.026	0.037	0.048	0.046	0.046	0.047
	[0.032]	[0.032]	[0.032]	[0.032]	[0.074]	[0.074]	[0.074]	[0.076]
Single Person Household	0.106**	0.104**	0.104**	0.104*	0.152	0.147	0.147	0.166
	[0.053]	[0.053]	[0.053]	[0.054]	[0.125]	[0.125]	[0.125]	[0.126]
Log(Age)	0.166***	0.159***	0.159***	0.152***	0.238**	0.228*	0.227*	0.238**
	[0.053]	[0.053]	[0.053]	[0.055]	[0.118]	[0.118]	[0.118]	[0.120]
Has experienced income shock in the last year	0.030	0.027	0.027	0.035	0.054	0.049	0.049	0.030
	[0.031]	[0.031]	[0.031]	[0.033]	[0.071]	[0.071]	[0.071]	[0.074]
Education (Ref.: Primary or Incomplete)								
Secondary	0.056	0.056	0.056	0.067	0.011	0.014	0.014	0.008
	[0.058]	[0.058]	[0.058]	[0.061]	[0.142]	[0.142]	[0.142]	[0.148]
Vocational-Technical	0.034	0.041	0.041	0.044	-0.016	-0.001	-0.001	-0.003
	[0.057]	[0.057]	[0.057]	[0.060]	[0.143]	[0.143]	[0.143]	[0.150]
Higher or incomplete higher	0.018	0.031	0.032	0.043	-0.147	-0.123	-0.122	-0.095
	[0.063]	[0.064]	[0.064]	[0.068]	[0.158]	[0.158]	[0.158]	[0.167]
Family Income (Ref.: - 1st - lowest)								
- 2nd -	-0.222***	-0.221***	-0.221***	-0.213***	-0.356***	-0.351***	-0.351***	-0.326***
	[0.028]	[0.028]	[0.028]	[0.029]	[0.100]	[0.100]	[0.100]	[0.102]
- 3rd -	-0.284***	-0.285***	-0.285***	-0.279***	-0.357***	-0.357***	-0.357***	-0.335***
	[0.026]	[0.026]	[0.026]	[0.028]	[0.107]	[0.108]	[0.108]	[0.111]
- 4th - (highest)	-0.338***	-0.336***	-0.336***	-0.332***	-0.723***	-0.717***	-0.716***	-0.687***
	[0.025]	[0.026]	[0.026]	[0.026]	[0.113]	[0.113]	[0.113]	[0.115]
Predicted Probability	0.2540	0.2534	0.2534	0.2574				
No. of Observations	1,074	1,074	1,074	1,033	1,044	1,044	1,044	1,004
Pseudo R^2	0.229	0.232	0.232	0.231	0.059	0.06	0.06	0.056

Robustness: Instrumental Variable models

- 3 instrumental variables for the year 2007 are used
- Total number of **newspapers** in circulation per 2-digit region (Mean≈56)
- Number of **local newspapers** in circulation (Mean≈15)
- Number of **public universities** per 2-digit region (Mean≈15)
- In the 1st stage regressions, the IVs are shown to exert a statistically significant impact on financial literacy (also joint significance and LM test)
  - Total newspapers (**+**); local newspapers (**-**); public universities (**+**)
- Exogeneity tests suggest that the IV estimates are likely to ***differ significantly***
- The results for retirement planning, life insurance, level of debt and consumption capacity confirm the previous results are ***robust***
  - Positive impact on retirement and life insurance planning, and negative on overindebtedness and consumption inadequacy
  - The magnitude of the effects is higher and interpretation might need some ***caution***
  - However, the IV models ***confirm*** the sign and significance of the effects

Table 7
Instrumental Variables

	(1) Retirement Planning	(2) Life Insurance	(3) Debt Level	(4) Low Consumption
	IV Probit	IV Probit	GMM	IV Probit
Financial Literacy Index	0.270***	0.280***	-0.232**	-0.254***
	[0.036]	[0.072]	[0.100]	[0.051]
Female	0.027	0.047	0.021	0.001
	[0.023]	[0.055]	[0.048]	[0.023]
Rural Region	0.006	0.021	0.061	0.008
	[0.033]	[0.051]	[0.051]	[0.039]
Single Person Household	-0.015	0.009	0.141*	0.029
	[0.041]	[0.038]	[0.082]	[0.042]
Log(Age)	0.095**	0.047	-0.223***	0.03
	[0.040]	[0.037]	[0.086]	[0.058]
Has experienced income shock in the last year	0.013	0.088	0.01	-0.008
	[0.024]	[0.096]	[0.052]	[0.024]
Education (Ref.: Primary or Incomplete)				
Secondary	-0.031	-0.013	0.075	0.045
	[0.042]	[0.045]	[0.078]	[0.038]
Vocational-Technical	-0.062	-0.045	0.038	0.082**
	[0.045]	[0.073]	[0.078]	[0.037]
Higher or incomplete higher	-0.092	-0.076	0.108	0.120***
	[0.056]	[0.113]	[0.092]	[0.044]
Family Income (Ref.: - 1st - lowest)				
- 2nd -	-0.002	-0.039	0.139**	-0.105
	[0.033]	[0.040]	[0.065]	[0.075]
- 3rd -	0.027	-0.036	0.077	-0.164*
	[0.035]	[0.061]	[0.064]	[0.095]
- 4th - (highest)	0.062	-0.09	0.125	-0.186
	[0.065]	[0.089]	[0.077]	[0.125]
No. of Observations	1,074	1,074	1,022	1,074
Log-Likelihood	-2,140.20	-2,123.90	-1222	-1,928.9
Wald χ^2 (F-statistic in (3))	230.58***	504.38***	2.76***	926.27***
Wald χ^2 test of exogeneity	3.41*	0.5		3.46*
Partial R^2 of excluded instruments:	0.0163	0.0163	0.0197	0.0163
Test of excluded instruments F(2, 1050)	4.92***	4.92***	5.59***	4.92***
(a) Kleibergen-Paap rk LM statistic $\chi^2(2)$			15.96***	

- We use data from Russia, an economy where consumer loans grew at an astounding rate
- Even though consumer borrowing is increasing very rapidly in Russia, only ***41%*** of respondents in our sample know about the working of ***interest compounding*** and only ***46%*** can answer a simple question about ***inflation***
- We find that financial literacy is significantly ***positively*** related to **retirement planning** and to both the willingness to purchase and actual purchases of **life insurance** packages
  - The ***females*** are more likely to be constrained to invest in life insurance
- Moreover, individuals with higher financial literacy are ***less*** prone to **overindebtedness** and **consumption inadequacy** (*e.g.* food & cloth consumption smoothening)
- They are ***more*** likely to acquire ***formal credit***, and ***less*** prone to ***utilising*** informal resources of finance
- Residents in ***rural*** areas are less likely to plan for retirement, more indebted, and more likely to have their food expenditure uninsured, compared to urban area residents