Financial Literacy in View of the Financial Crisis: Evidence from Russia

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Abstract: The current financial crisis has generated interest in better understanding how to promote more responsible and prudent individual saving and borrowing behavior. The ability of consumers to make informed financial decisions is critical to developing sound personal finance, which can contribute to increased saving rates, more efficient allocation of financial resources, and greater financial stability. In this paper we use a unique panel dataset (2008 and 2009) from Russia, an economy where consumer loans grew at an astounding rate – from about US$ 10 billion in 2003 to over US$ 170 billion in 2008. The survey contains financial literacy questions, as well as questions on consumer borrowing (formal and informal), savings, and spending behavior. We use this dataset to study both the financial consequences and the real consequences of lower financial literacy. For instance, 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 related to participation in financial markets and negatively related to the use of informal sources of borrowing, using the number of regional newspapers and universities as valid instrumental variables. Individuals with higher financial literacy are also significantly more likely to report greater unspent income and levels of spending. In addition, the relationship between financial literacy and unspent income is higher during the financial crisis, after controlling for household characteristics.

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1. Introduction

The current financial crisis, along with the consumer credit losses have generated interest in better understanding how to promote more responsible and prudent individual saving and borrowing behavior. The ability of consumers to make informed financial decisions is critical to developing sound personal finance, which can contribute to more efficient allocation of financial resources and financial stability (*e.g.* Lusardi, 2009; Lusardi and Tufano, 2008). Greater financial literacy can also be an important component to efforts to increase saving rates and lending to the poorest and most vulnerable consumers (Cole and Zia, 2010).

Our paper extends the extant literature in a new direction, using a detailed panel survey of financial literacy prior to and during the 2009 financial crisis, in a nationally representative sample of over 1,000 Russian individuals. The surveys include questions on financial literacy, the use of various financial products and debt load, indicators of discretionary spending and unspent income, as well as detailed demographic and socioeconomic information. 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 address some novel questions: For instance, what is the level of financial literacy in a country without a legacy of consumer credit or a precedent of financial education? Does the relationship between financial literacy and the use of financial services hold over time? Do higher levels of financial literacy affect financial vulnerability during crises?

We find that financial literacy in Russia is significantly related to formal banking and borrowing and negatively related to the use of informal sources of borrowing. Individuals with higher financial literacy are also significantly more likely to report greater unspent income and less likely to experience lower levels of spending. In addition, the relationship between financial literacy and unspent income is higher during the financial crisis, after controlling for household characteristics.

As Russia transitions to a market-based banking system, the fear is that financial education and basic financial literacy is lagging behind. It is likely that many young Russians did not have parents with bank loans[1] (*i.e.* learned financial skills at home) or received formal financial literacy courses in school (*i.e.* there is no curriculum requirement for financial education in Russia). Furthermore, consumer debt was almost non-existent before 2001, so few individuals are likely to have long personal banking relationships or experience with other financial products. For example, consumer loans (excluding mortgages) in Russia recently grew at an astonishing rate: from about US$ 10 billion in 2003 to over US$ 170 billion in 2008 – accounting for over 10% of GDP in 2008 versus less than 1% in 2003 (World Development Indicators, 2010).

In the context of current events, this is likely the first financial crisis that most Russians are experiencing as borrowers. A fear is that the rapid growth of consumer credit combined with low levels of financial literacy – and the shock of the global financial crisis – might be a dangerous mix that can lead to consumer overindebtedness and financial distress.

[1] Although State Banks existed in the Soviet times, their main role was to serve state-owned forms. There were no credit-reporting bureaus and the availability of credit to private firms and individuals was limited (McMillan and Woodruff, 2002).

The paper proceeds as follows: Section 2 provides a brief review of the recent developments in the financial literacy literature; Section 3 reviews the environment for consumer finance in Russia; Section 4 describes our data, variables, and summary statistics; and Section 5 presents our empirical strategy and reports our results. Section 6 concludes.

2. Financial Literacy and Economic Outcomes

Earlier studies find that lower financial literacy is linked to lower household savings and stock market participation, as well as higher reported over-indebtedness (*e.g.* Lusardi, 2009; Lusardi and Tufano, 2008; and Van Rooij, *et al.*, 2007). For instance, individuals with lower levels of debt literacy transact in higher-cost manners (interest rates, fees, *etc.*) and report that their debt loads are excessive or that they are unable to judge whether their debt is appropriate (Chen and Volpe, 1998; and Mandell, 2001). Consumers with lower financial literacy also systematically underestimate the returns to long-term saving (Stango and Zinman, 2008). In addition to greater susceptibility to fraud and abuse, the lack of financial literacy might lead to borrower behavior that increases financial fragility (*i.e.* greater loan losses). Informed consumers also exercise innovation-enhancing demand on the financial sector and play an important monitoring role in the market that can help improve transparency and honesty in financial institutions. Furthermore, financial illiteracy appears to be particularly severe for key demographic groups: women; less educated; low income; ethnic minorities; and older respondents (*e.g.* Bernheim, 1995; Lusardi and Mitchell, 2006; 2007a; 2007b; and 2008a; *inter alia*).

Furthermore, recent studies use randomized control samples to explore the *causal* impact of financial literacy training on improved financial outcomes. A randomized evaluation in the U.S. finds that employees of a large university offered a cash incentive to attend a training session on retirement product are significantly to attend, and more likely to enroll in a tax-deferred retirement account (Duflo and Saez, 2003). In an emerging market, a study in Indonesia offered a randomly selected set of unbanked individuals financial literacy training sessions and found increases in the demand for banking services among those with low initial levels of financial literacy and low levels of education (Cole *et al.*, 2010).

The relationship between higher financial literacy and more prudent financial decisions has also been supported in other countries, such as the UK, Australia, Italy, the Netherlands, Japan, Korea, and Mexico (Chistelis, *et al.*, 2005; ANZ Banking Group, 2003; Cercasi, *et al.*, 2008; van Rooij, *et al.*, 2008; OECD, 2005 (Korea and Japan); and Hastings and Tejeda-Ashton, 2008; respectively.)

Financial literacy also appears to also be linked to economic development: for instance, the percentage of individuals in the United States that correctly answered questions on interest compounding and inflation was 72%, versus 79% in the Netherlands, 52% in Indonesia, 46% in Russia and 34% in Rural India (*Figure 1*).[2]

[Insert Figure 1 about here]

[2] Lusardi and Mitchell (2005) for the U.S. and Cole *et al.* (2010) for Indonesia, and India. The figure for Russia is calculated by the authors.

3. The Russian Banking System

The Russian economy grew on average by almost 7% annually from 2001 to 2009, while annual income per capita grew from US$ 2,101 in 2001 to US$ 8,676 in 2009, an increase of over 400% (*Figure 2*). This rapid increase in purchasing power was associated with an increase in demand for consumer credit, particularly for the purchase of household appliances and other durable goods (Presniakova, 2006)[3]. During this same time, consumer loans grew at an astonishing rate: from about US$ 10 billion in 2003 to over US$ 170 billion in 2008 (preceding a decline to about US$ 120 billion in 2009). This accounted for about 2% of GDP in 2003 versus about 10% in 2009.

[Insert Figure 2 about here]

In aggregate, the Russian banking system grew at a rate of over 40% between 2003 and 2008, with almost a trillion US$ assets in 2008. Yet, despite its recent growth, the Russian banking system remains small by international standards; domestic credit to the private sector was 41% of GDP in 2008, relative to other BRIC markets like Brazil (54%), India (49%), and China (104%). In addition, the proportion of household loans as a percentage of GDP in 2007 remained below 10%, lower than in many developing East European states (15%) and developed West European states (above 50%) (Oxford Analytica, 2007b). Furthermore, in 2006, close to 60 million Russians (42% of the population) were estimated to be left out of the banking system (Rohland, 2008).

Banks are also challenged by a more generally unfavorable investment climate, as indicated by Russia's ranking of 123 out of 181 countries in the World Bank "Ease of Doing Business" ranking (where 1 indicates the most favorable business environment)

[3] It is possible that Russians are more comfortable borrowing for durable goods since this is similar to the interest-free loans for buying goods on installment that were quite popular in Soviet times.

(Doing Business, 2011). In particular, Russia is ranked 89 in "Getting credit" – which includes creditor protection and the credit information sharing infrastructure – as well as 93 in "Protecting Investors" (*i.e.* shareholder rights).

Within this weak business environment, there is also concern that the tremendous growth of credit will be associated with high rates of default. The share of bad consumer loans increased to 12.25% in 2010 (Central Bank of Russia, 2011). It is within the unique context of the Russian banking system that our survey instrument was designed.

4. Data and Summary Statistics

We use a panel dataset collected by face-to-face surveys of 1,600 Russian individuals in May/June 2008 and 1,240 individuals in June 2009. The sample[4] was designed to be nationally representative at the individual and the household level, and weighted by gender, age, education, 46 oblasts/administrative regions, and seven federal regions (excluding the North-Caucasian (Chechnya) federal district)[5]. From our original sample, 22% of individuals either no longer resided at the same location or refused to answer the follow-up survey. Summary statistics show no significant sample bias across

[4] The Russia Financial Literacy diagnostic survey was undertaken as part of the preparation for the World Bank-supported Russia Financial Literacy and Financial Education program in 2008. The authors of the questionnaire are Prof. L. Mundell (primary author, consultant), A. Markov (ECSHD, WB) and I. Shulga (Moscow office, WB). The survey was conducted by the National Agency for Financial Studies (NAFS) in 2008 by request of the World Bank. The national representative survey was aimed to provide information on the initial level of financial literacy (*i.e.* financial planning and managing debt, attitudes to/understanding of personal responsibilities and consumer rights in the area of financial services, knowledge of financial products/services, etc.). The survey asked basic questions on features of financial behavior, attitudes to and demand for financial education of the Russian population. The NAFS kept a detailed record of the individuals who were eligible to reply to the questionnaire, and could examine whether the sample obtained is representative of the population. Their analysis showed this is the case and they recommended that weighting is unnecessary.

[5] Since March 1, 2008 the Russian Federation consists of 83 federal subjects. Six types of federal subjects are distinguished: 21 republics, 9 krais, 46 oblasts, 2 federal cities, 1 autonomous oblast, and 4 autonomous okrugs.

key covariates (available upon request)[6]. The two maps in *Appendix C* show a clear picture of the 46 Russian oblasts, *i.e.* key administrative regions surveyed. The vast white areas without data are the sparsely populated areas of the Siberian and the Far-Eastern federal regions, along with areas outside the key administrative regions. Hence, the survey is representative at both the administrative and federal region level.

This unique dataset provides rich demographic and socioeconomic information, and importantly, an insight into local financial penetration, vulnerability, literacy and financial planning. The primary respondents were the household heads, without an age limit. No specific financial incentives were offered to the respondents for completing the survey. *Table 1* provides summary statistics of the pooled sample (2008 and 2009) for our variables of interest.

[Insert Table 1 about here]

4.1 Demographic Information

First, we examine individual demographic characteristics. Our sample consists of 43.9% male respondents, consistent with national census averages (Russia Census, 2002). The average age in the pooled sample is around 45 years of age. Our age distribution (not shown) is fairly smooth, with about 74% of individualsaged less than 55 (84% less than 65). Most individuals (66%) live in households with three of more individuals, while 23% live in households with two individuals, and 11% live alone. Although we do not have information on marital status, we include a dummy for individuals that live alone. 11.6%

[6] Summary statistics by gender, age, and education (% with secondary degrees) are very similar to those found in the "Russia Longitudinal Monitoring Survey (LSMS), 2002" as well as the "Russian National Census, 2002." Relative to the census data, however, our survey appears to under-represent individuals in the highest income bracket. This is likely the result of the 'gated-community' challenge, which makes it difficult to gain access to conduct face-to-face interviews with the highest income individuals.

of the individuals in the pooled sample live in single-person households. 28.2% of the individuals in our sample live in urban regions, defined as settlements with a population greater than 500,000[7]. With respect to the detailed federal region breakdown, 27.1% of our respondents reside in the Central federal region, 10% in the North-western, 17.3% in the Southern federal region, 22.9% in the Volga, 5.8% in the Urals, 11.3% in the Siberian, and the remaining 5.7% in the Far-eastern federal region.

In our sample, 52.5% are employees (both skilled and unskilled), while 25.5% are retired. Among the employed group, 9% of the total sample works in skilled non-manual occupations, 26.9% in skilled manual, 13.5% in unskilled non-manual occupations, and 3.1% in unskilled manual labour. Only 2.8% of the sample identify themselves as 'entrepreneurs' or self-employed. The remaining individuals are unemployed (0.9%), and 18.3% define themselves to be in other categories excluded from the workforce, *e.g.* students, enlisted personnel, etc. The education level of individuals in our sample is higher than comparative emerging markets: only 8.4% of the sample has less than a secondary education; 29.9% have completed secondary school; an additional 38.4% completed a special vocational/ technical school; and 23.4% have initiated or completed their higher education.

Second, we examine measures of both income and spending. The survey asks individuals to report their individual and household monthly income, but these values are missing for almost 40% of the sample (*i.e.* individuals that refused to answer). In our sample, mean personal monthly income for 2008 is US$ 1,528, while median income is US$ 2,345. This compares with official statistics for 2005 of mean gross income of

[7] This variable is robust to the substitution of a dummy indicating that the individual resides in Moscow or St. Petersburg (the two largest Russian cities).

US$ 3,010, and suggests our survey might under-represent high-income individuals (Russian Statistics Office, 2008) – or that high-income individuals were less likely to report their income. Therefore, for our main regressions in the next section we interpolate missing income observations and include income brackets[8]. The survey also includes a self-reported measure of wealth[9]. All main results are robust to the substitution of log net income and categorical wealth dummies for imputed income brackets.

We also include a variable "Income shock", if the individual responded "Yes" to the question, "*Did you (your family) experience an unexpected significant reduction of your income over the past 12 months*". The summary statistics in Table 1 show that 35.9% of the sample reported the experience of a negative income shock during 2009.

[Insert Table 2 about here]

4.2 Financial Consequences

Our next set of variables measure financial 'penetration', which includes variables related to the affiliation with financial institutions and borrowing behavior. Our first variable is "*Bank Account*", which indicates whether an individual personally uses a current account or deposit account, including plastic cards (34.4%)[10]. The figures are

[8] The corresponding figures for each of the quartiles of the imputed income distribution are the following: Bottom quartile (1st): monthly income<4,727 rubles ($196); 2nd quartile: 4,727 rubles ≤ monthly income < 8,000 rubles ($333). 3rd quartile: 8,000 rubles ≤ monthly income < 13,000 rubles ($541). 4th quartile: monthly income ≥ 13,000 rubles.

[9] This is a categorical variable: the first category (lowest wealth) is individuals that report that they do not have enough money, even for food (7%); the next category is individuals that report they can buy food, but cannot buy clothes (23%); the the third category is individuals that report they can buy food and clothes, but not durable goods (e.g. a tv-set or refrigerator) (52%); finally, individuals that report they can buy durable goods (16%).

[10] A caveat is that this might overreport the number of individuals that actively use a bank account, since plastic cards are often required of employees to receive payrolls and might only be used for this transaction.

33.8% for 2008 and 35% for 2009, with only 13 individuals (1.2%) adding an account in 2009 (the switches between the two years are shown in *Table 2*). Next, we include a dummy if the individual reports personally using "Consumer Credit", acquired from formal financial institutions. 17.9% of the sample has acquired credit from a formal source, with the figures being 18.1% for the year 2008 and 17.7% for 2009. Table 2 shows that 12.2% of the individuals (131 observations) acquired formal credit in 2008 and not in 2009, while 127 individuals (11.8% of the sample) who did not have formal credit in 2008 acquired it in 2009. Finally, we examine whether the individual uses "*Informal Debt*", which we identify as individuals that report "Yes" to the question: "*Do you currently have debt*?", but do not report having any bank credit, which includes consumer debt, credit cards, and mortgages. 14.9% of the individuals in the sample are affiliated with informal sources of credit, with the figure being significantly higher for the year 2008 (17% versus 12.9% in the year 2009). 140 individuals (13% of the sample) acquired informal credit in 2008, but not in 2009, and 97 individuals (9%) acquired it in the latter year.

An important point to note is the absolute and relatively low levels of trust in the banking sector, which is certainly a factor in explaining the low use of banking products.[11] The "Life in Transition Survey, 2006" (EBRD, 2006), shows comparative statistics for Russia, relative to 28 other Eastern European and Central Asian economies (not shown). Remarkably, only 28% of surveyed individuals in Russia report confidence in banks, the second to lowest score in the region.

[11] It is beyond the scope of this paper to speculate whether greater trust in the banking sector is affected by financial literacy, and leave this question for future research.

4.3 Real Consequences

The next set of variables attempt to assess individual vulnerability. A set of two variables is examined, related to individual spending capacity and the availability of income that is unspent. This set of variables related to low spending comprises of a dummy variable for individuals that report not having enough money for more than food and an ordinal variable ranked between 1 (highest spending) and 5 (lowest), *i.e.* equal to one if the individual could afford expensive things, equal to two if able to purchase durable goods, but not expensive items like a car, *etc*. (see footnote 5). As it is shown in Table 1, 31.6% of the individuals in the sample report low spending capacity, with the figure being higher during 2009 (33.1%, compared to 30.1% in 2008). Table 2 shows that 13.8% of the sample (148 individuals) report low spending capacity group in 2008 but not in 2009, and 16.8% (180) report low spending in 2009, but not in 2008. Moreover, the low spending index (1-5) has an average value 3.22 (3.20 in 2008 and 3.25 in 2009). 22.5% (242) of the respondents experience lower levels of spending in 2008 than in 2009, while 27.5% (295) report lower spending levels in the later year than in the former. In *Panel B1 of Table 2*, the ordinal spending variable is tabulated, indicating that nearly half of the sample is in the middle spending group, 20% are in categories 1 and 2 (higher spending), and 31.2% in total report spending in the lowest categories, 4 and 5.

The set of variables examining the availability and levels of income unspent is based on the question: "*How often during the last 12 months did you (or your family) have any money unspent from previous earnings before the next moment for new revenues arrived*". The menu of responses entails: "Always", "Very Often", "Sometimes", "Very rarely", and "Never"). First, a dummy variable is generated, taking the value one if

the individual reported on of the two top categories, *i.e.* "Always" or "Very Often". Then, the ordinal variable ranging from 1 to 5 is examined, with one being the lowest category, corresponding to "Never", and 5 being the highest category, corresponding to "Always". The statistics in Tables 1 and 2 indicate that 39.4% of the sample report having unspent income on a typical basis (34% in 2008 and 44.8% in 2009). The difference is statistically significant at the 1% level. 16.1% (173) of the respondents report unspent income in 2008, but not in 2009, while 26.9% (289) report unspent income in the latter but not in the former year. We speculate that at the onset of the crisis, some individuals might increase their savings for a time when they expect to have less income. The ordinal variable for levels of unspent income has an average value of 2.36, with the average being significantly higher in 2009 (2.57, compared to 2.14 in 2008). Table 2 shows that 25.1% (270) of the respondents experience higher frequency of unspent income in 2008 than in 2009, while 44.3% (476) experience higher frequency in the latter year of the sample. In *Panel B2 of Table 2*, the ordinal unspent variable is tabulated, indicating that 22.6% is in the middle unspent income group, 60.6% are in categories 1 and 2 (lowest), and 16.8% in total report unspent income in the highest categories, 4 and 5.

4.4 Financial Literacy Questions and Index

Our survey includes four financial literacy questions, covering interest (two questions), inflation (one question), and sales discounts (one question). The questions address four of the five broad dimensions of financial literacy identified in van Rooij, Lusardi, and Alessie (2007): numeracy, interest compounding, inflation and money illusion; there are no questions in the Russia survey to measure the time value of money.

[Insert Table 3 about here]

4.4.1 Financial Literacy Questions

The questions are described in detail in *Panel A of Table 3*. On average, 41.4% and 34.6% answer questions on interest compounding correctly in 2008 and 2009 respectively. 23.3% and 35.9% answer correctly in the monthly interest payment calculation question, in the two years respectively. 45.6% in 2008 and 50.5% in 2009 answer correctly questions on inflation; and 69.5% answer correctly questions on store discounts in both years. Notably, a large number of individuals were unwilling or unable to even guess the correct answer: on average, in the pooled sample, 30% of individuals replied "don't know" to questions on interest compounding; 49% on monthly interest payments; 24% to questions on inflation; and 22% on questions on discounts.

As shown in *Panel B of Table 3*, very small numbers of individuals answer correctly in all four questions. 8.57% of the individuals give all 4 correct responses in 2008 and 10.89% in 2009. 1.12% and 0.37% give all incorrect responses in the two years, respectively, and 12.85% reply "don't know" to every question in 2008 and 10.61% in 2009. *Panel A of the Appendix A* shows that every pairwise correlation between financial literacy responses is significant at 1% (correlations between dummy variables taking the value one for correct responses and zero if otherwise for 2008 are shown).

4.4.2 Constructing the index

We construct a continuous index of financial literacy using principal component analysis (PCA) to reduce the information from the four survey questions detailed in the previous subsection. For each question, we create a binary variable to identify the correct response ("Difficulty Answering Question" is treated as an incorrect response) and

perform PCA analysis based on polychoric correlations, following the method developed to adapt PCA to ordinal data by Kolenikov and Angeles (2004). We estimate the financial literacy index as the first principal component of the four financial literacy questions (equally weighted). The procedure is described in greater detail in the Appendix A for the year 2008 (the analysis for 2009 is available upon request). The corresponding distribution of eigenvalues is presented in *Appendix A, Panel B* (the first component accounts for 53% of the variation) and the factor loadings/scoring coefficients for the index are detailed in *Panel C*.[12] The financial literacy index distribution is show in *Panel E*.

4.4.3 Alternative Financial Literacy Measures

In the analysis of the next section, apart from the constructed financial literacy index, we also use (a) the number of correct responses in the financial literacy questions, and (b) the responses to a question of self-assessment of an individual's financial literacy ("On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?"). The responses ranged from 1 (lowest) to 5 (highest), *i.e.* 1="Don't have any knowledge and skills", 2="Unsatisfactory knowledge and skills", 3="Satisfactory knowledge and skills", 4="Good knowledge and skills", 5="Excellent knowledge". *Panel B3 of Table 2* shows that 17.3% of the respondents assess their knowledge as in the lowest category, 29.3% respond 2, 36.9% declare 3, 14.4% assess their knowledge as good, and 2.1% as excellent. The inspection of the

[12] Although we retain the first factor for the purpose of parsimony, the optimal number of factors, identified by Humphrey-Ilgen parallel analysis (Lance, Butts, and Michels, 2006) is in fact two. We compare the number of factors derived from our survey data against factors for random numbers representing the same number of cases and variables and obtain the optimal number of factors at the intersection of plots of factors against cumulative eigenvalues for the two sets of data (Panel D).

figures for the two years also suggests that fewer individuals assess their knowledge to be in higher groups in the year 2008, compared to 2009.

The latter picture of higher financial literacy in the year 2009 is also shown in Table 1, where averages by year are presented for the three financial year measures. All three measures have a higher average value in 2009 compared to 2008, and the differences between the two years are statistically significant.

5. Financial Literacy and Financial Outcomes

5.1 Who are the Financially Literate in Russia?

[Insert Table 4 about here]

Table 4 presents averages between individuals with high and low financial literacy, along with levels of significance from t-tests of mean differences. All three financial literacy measures are inspected, and for the purpose of this exercise individuals with high financial literacy are considered as those with: (a) financial literacy index greater than the sample median (Panel A); (b) correct number of responses between 2 and 4 out of four questions (Panel B); or (c) self-assessment of financial knowledge between 3 and 5 (Panel C). Individuals in the remaining categories comprise the low financial literacy groups for each measure inspected.

The inspection of all three panels of the table suggests some consistent patterns across all three measures considered. Hence, the financially literate individuals are more likely to be male, married or cohabiting, younger, and residents of urban Russian regions. They are more likely to have vocational/technical or some level of higher education, compared to individuals with lower financial literacy. Moreover, the individuals

employed in skilled or non-manual occupations are more likely to score highly in financial literacy. Pensioners are less likely to be in the highest financial literacy groups. The differences in financial literacy are not highly or consistently significant across federal regions. Importantly, 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. The differences in the middle income quartile groups are not statistically significant, however; average family income is higher for the financially literate groups and the difference between the high and the low literacy groups in terms of family income is statistically significant at the 1% level.

Of primary interest to this study is the association between financial literacy and financial outcomes. The last part of Table 4 indicates that there is a moderate positive association between financial literacy and having a bank account (also shown in the correlation matrix between financial literacy and bank account in *Appendix Table B2*). This is also the case when it comes to obtaining formal credit, and individuals in the high literacy group are significantly more likely to obtain formal credit. There are no significant mean differences with respect to the informal credit variable.

In addition, the last few rows of the table suggest that the high literacy groups are significantly less likely to experience low spending, both in terms of the binary and the ordinal low spending variable. The differences are large and significant, with 24.1% of the respondents in the high literacy group of Panel A being in the low spending category, as opposed to 37.9% of the low literacy group. The difference is significant at the 1% level. In contrast, they are significantly more likely to experience unspent income and with higher frequency. In Panel A, 44.9% of the highly literate respondents have some

unspent income on a regular basis, as opposed to 34.7% of the lowly literate ones. The differences are largely consistent across the three financial literacy measures used to distinguish between highly and lowly literate individuals.

5.2 Does Financial Literacy Matter?

Table 4 shows highly significant differences in responses in financial literacy questions between individuals that do and do not use consumer credit. In this section, we examine whether the interesting differences observed with respect to the association between financial literacy and financial penetration and vulnerability persist in regression analysis settings. In particular, we examine the correlates of our financial penetration and vulnerability indicators. First, we estimate three sets of regressions (a) bank account, (b) formal credit and (c) informal finance as the dependent variables. Then, we utilise as dependent variable: (a) low spending, and (b) unspent income. Both binary and ordinal variables are used. The sets of explanatory variables include: financial literacy, gender, single-person household, the logarithm of age, the experience of a negative income shock during the last year, and dummy variables for education (4 dummies), occupation (8 dummies), family income quartiles, and federal region (7 dummies).

5.2.1 Empirical Strategy

Our empirical strategy involves using lagged values of the independent variables for the year 2008, in order to examine their impact on financial outcomes in the year 2009. This strategy is followed in order to mitigate simultaneity problems between financial literacy and the financial outcome variables. Moreover, in separate regressions, we also utilise instrumental variable techniques to examine the impact of financial literacy on

financial penetration and vulnerability. Two instrumental variables for the year 2007 are used to identify the impact of financial literacy in first stage regressions: (a) the number of newspapers in circulation per 2-digit region (both regional and national), and (b) the total number of universities per two digit region (both public and private). The two variables can intuitively be expected to be correlated with financial literacy, in terms of "exposure" to newspaper readership and higher education in the region, and not with the unobserved determinants of the financial outcome variables. Moreover, as shown in the next paragraphs, they also prove to be statistically valid instruments.

It can be seen from the bottom of Table 1 that the average number of newspapers is 56 and the average number of universities 33. Some additional information with respect to the two instrumental variables is presented in *Appendix C*. The maps in the two panels of the figure illustrate the regional variation in the number of newspapers in circulation and the number of universities in the 46 Russian oblasts of our sample[13].

Finally, in additional sets of estimates we utilise both years of panel data and estimate models with individual random effects and then, fixed effects models. This is performed as a robustness exercise, and also in order to estimate within effects arising from the variation of the independent variables.

5.2.2 Financial Penetration

Our first set of estimates examines the correlates of bank account ownership by the respondents in our sample. A potential caveat is that in Russia it is a common practice that an employer provides its employees with current accounts and related debit cards, so-

[13] In terms of federal regions (figures available upon request), the Central federal region, Volga and the Southern region have the highest newspaper circulation, while the Urals, the Far-Eastern and the Siberian region have the lowest numbers of newspapers in circulation. Moreover, the Southern region has the highest number of universities, and the next highest are the North-Western and the Central regions. The lowest numbers of universities are found in the Urals, the Far-Eastern and the Siberian federal region.

called ‘salary cards’, at a bank chosen by the employer, and the salaries are paid to these accounts only. However, generally the employee can use their account only to withdraw salary, and cannot accept deposits; this might overestimate the actual voluntary ‘use’ of bank accounts (Danske Bank Group, 2010). Moreover, due to the low number of new bank accounts for the year 2009 in the sample, panel models cannot be estimated. Given these caveats, *Table 5* presents probit estimates of bank account ownership. Lagged values of the independent variables for the year 2008 are used. Marginal effects and robust standard errors are presented throughout the table.

Column 1 of Panel A presents the baseline probit estimates which exclude the financial literacy measures. It is shown that the more educated and the wealthier are more likely to have a bank account, and there is also a positive relationship between the latter and the logarithm of age. In Columns 2, 3 and 4, our financial literacy measures are incorporated in the regressions, *i.e.* the financial literacy index, the number of correct responses, and the self-assessed literacy. All three variables exert a moderate positive impact on the likelihood to own a bank account. They are statistically significant at the 10% level, and the marginal effects estimated reveal that an increase from a half standard deviation below to a half standard deviation above the average financial literacy raises the likelihood of owning a bank account by 6.3-8.8% depending on the measure used and given the overall predicted probability of the model (shown at the bottom of the table).

[Insert Table 5 about here]

Panel B of Table 5 presents instrumental variable probit estimates of the probability of owning a bank account. The endogenous variable is financial literacy and the set of instruments entails newspaper circulation by 2-digit region, and the number of

public and private universities. The first stage regressions are shown in the *Appendix Table B1*. The two instrumental variables are shown to exert a positive statistically significant impact on financial literacy. They are significant in predicting our two main financial literacy measures (*i.e.* the index and the number of correct responses), in terms of both their individual and joint impact. Both the F-statistics from the tests of joint significance and the LM tests of omitted variables shown at the bottom of the Table reject the null hypotheses of joint insignificance and "insignificant improvement" to the model. Our two instrumental variables are not significant in explaining self-assessed financial literacy, but this is less of a concern for the purposes of this study.

The estimates in the second stage reported in the last three columns of Table 5 show that the relationship between literacy and bank account ownership remains positive, statistically significant, and is somewhat larger in the IV probit estimates. Moreover, the exogeneity test is not rejected. Thus, the OLS estimates do not differ significantly from the GMM estimates. Moreover, the Hensen J statistic of overidentifying restriction at the bottom of the Table accepts the null hypothesis that the instruments are valid.

Our second set of estimates is presented in Table 6 and examines the impact of financial literacy on the probability of acquiring formal credit. The results using the financial literacy index and the number of correct responses are presented due to space considerations. The self-assessment measure is separately reviewed at the end of this section. The probit estimates with lagged independent variables in Columns A2 and A3 show that financial literacy is significantly positively related to the likelihood of having formal credit. The marginal effects displayed suggest that an increase from a half standard deviation below to a half standard deviation above the average financial literacy

raises the likelihood of acquiring formal credit by 14-18% depending on the measure used and given the overall predicted probability of the model.

[Insert Table 6 about here]

Panel B of Table 6 presents IV probit estimates of the formal credit model with lagged independent variables. The Kleibergen-Paap LM and Wald statistics reject the null hypothesis that the equation is underidentified or weakly identified. The weak-instrument-robust inference tests[14] accept the null hypothesis that the coefficients of the excluded instruments are jointly equal to zero. The Hensen J statistic of overidentifying restriction at the bottom of the Table marginally rejects the null hypothesis that the instruments are valid at the 10% level. The results confirm the positive significant association between financial literacy and formal credit. The magnitude of the marginal effects is very similar to the baseline probit estimates.

Furthermore, Panels C and D of Table 6 present estimates from random effects probit and fixed effects logit models using the panel sample of observations from both 2008 and 2009. The latter model excludes observations that do not vary within the panel, and hence comes at the cost of sample size. However, apart from controlling for unobserved heterogeneity of various types, the models are estimated to examine the robustness of our findings in the panel sample and particular within groups in the latter case. Both the marginal effects from the random effects model and the odds ratios presented for the fixed effects model confirm the positive association between financial literacy and formal credit overall and within groups. Hence, an increase in the financial

[14] These additional reported tests are from linear probability models examining instrument validity. The results are available upon request. The weak-instrument-robust inference tests examine the null hypothesis that the coefficients of the endogenous regressors in the structural equation are jointly equal to zero and that the overidentifying restrictions are also valid. Both tests are robust to the presence of weak instruments. The tests are equivalent to estimating the reduced form of the equation (with the full set of instruments as regressors) and testing that the coefficients of the excluded instruments are jointly equal to zero.

literacy score within the year is associated with a higher likelihood of acquiring formal credit.

Finally, *Table 7* presents the same set of estimates as Table 6, examining the likelihood of acquiring finance from informal sources as the dependent variable. The marginal effects from the probit model with lagged independent variables, shown in Column 1, suggest that single individuals and the low educated are more likely to acquire informal credit, while there is a negative association between the latter and the logarithm of age. Moreover, individuals who experienced a negative income shock during the last year are more likely to seek informal finance, which indicates the necessity dimension of seeking such sources of credit. Columns A2 and A3 adhere the financial literacy index and the number of correct responses respectively, to the specification. It is shown that financial literacy is negatively associated with the likelihood to be involved with informal finance mechanisms. The marginal effects suggest that an increase from a half standard deviation below to a half standard deviation above the average financial literacy reduce the likelihood of acquiring formal credit by 10-13% depending on the measure used and given the overall predicted probability of the model. The effects are statistically significant at the 1% level.

[Insert Table 7 about here]

Panel B presents the marginal effects and robust standard errors from the IV probit regressions with lagged independent variables. The results confirm the previously shown negative association between financial literacy and informal credit. The tests at the bottom of the Table confirm the instrument validity, and the magnitude of the coefficients is increased by almost a twofold compared to the probit model.The negative sign of the

effect is retained and the coefficient becomes statistically significant at the 1% level. The panel models in Panels C and D indicate weaker negative associations between financial literacy and informal finance, and the negative effects shown are not significant at any conventional levels. Overall, the significance of the Year 2009 crisis dummy and income shock dummy in the fixed effects model appear to highlight the primary use of informal credit as a lender of last resort.

5.2.3 Financial Vulnerability

The previous sub-section revealed significant positive effects of financial literacy on affiliation with formal financial institution and a moderate negative association with informal sources of finance. This section examines the relationship between financial literacy and financial vulnerability indicators, such as spending levels and the availability of unspent income. Tables 8 and 9 replicate the same four sets of estimates as the previous tables, using as dependent variables: (a) a low spending dummy variable (food adequacy indicator), and (b) an ordinal spending level variable, ranging from 1 (high spending) to 5 (low spending).

The results in Table 8 show that single and older individuals, as well as those on the lowest income quartiles are more likely to experience low spending levels. The addition of the financial literacy variables in the lagged probit models of Columns A2 and A3 indicate that the financial literate are less likely to experience low spending. The magnitude of the marginal effects is such that an increase from a half standard deviation below to a half standard deviation above the average financial literacy reduces the likelihood of experiencing low spending by 8.5-10% depending on the measure used and given the overall predicted probability of the model. The effects are significant at the 5%

level. The IV probit estimates in Panel B confirm the negative association between financial literacy and low spending, along with the validity of the instruments used. The magnitude of the coefficients in the IV model is very similar to the the probit model. Moreover, the sign and significance (10% level) of the effects is retained and the instruments used are shown to be valid.

[Insert Table 8 about here]

Moreover, the panel models in Panels C and D of Table 8 confirm the negative relationship between financial literacy on low spending both in the random effects probit model and within groups, in the fixed effects logit model. The results are statistically significant at all conventional levels, and the magnitude of the effects is similar to those of the probit model. In the panel models of Table 8, two additional specifications are introduced in Columns C1, C2, and D1, D2. (These results are robust to the substitution of the financial literacy index with the number of correct responses, not shown). These include interaction terms between the financial literacy variables and the dummy variable for the year 2009. The rationale of this exercise is to examine whether the interaction between financial literacy and the year of the financial crisis is significantly associated with lower spending levels. However, both sets of interaction terms are not statistically significant at all conventional levels.

The estimates in Table 9 replicate the previous exercise using ordinal spending as the dependent variable, with the intension to utilise all the available information when estimating the relationship between literacy and spending adequacy. An ordered probit model is used in Panel A and linear models in Panels B, C, and D (two-stage least squares, random effects GLS, and fixed effects respectively). All four panels of Table 9 exhibit

statistically significant negative coefficients of the financial literacy measures on the spending models. In the panel models, the interaction terms between financial literacy and the year 2009 are negative, but once again statistically insignificant.

[Insert Table 9 about here]

Our last two Tables present estimates for models with unspent income, in its binary and ordinal version respectively, as the dependent variable. Table 10 presents the results from the same four sets of specifications of the previous tables. The baseline lagged probit estimates in Column 1 show that wealthier individuals are more likely to have income that is unspent on a regular basis. Columns A2 and A3 add the financial literacy variables to the lagged probit specification and show that financial literacy is significantly positively related to the incidence of unspent income on a monthly basis. The magnitude of the marginal effects presented suggests that a 1 standard deviation increase in financial literacy raises the likelihood of unspent income by 10-11.5%. The IV probit estimates in Panel B confirm this is the case. They show a significant positive marginal effect of financial literacy, of a slightly lower magnitude than the probit model, and also confirm the validity of the instruments used.

Moreover, the estimates from random effects probit models in Panel C show a positive effect of financial literacy in the panel sample, with marginal effects similar in magnitude to those of the probit model. The inclusion of the interaction terms between financial literacy and the year 2009 in the panel models reveals a significant positive interaction term. Hence, financially literate individuals are significantly more likely to have unspent income in the year 2009, compared to the remainder. However, the fixed effects models in Panel D fail to show significance of the financial literacy variables

within individuals although the odds ratios obtained are positive and greater than one. This result might also suggest a relationship between unspent income and

[Insert Table 10 about here]

Finally, in Table 11, we utilize the frequency of unspent income as an ordinal dependent variable, and present estimates of lagged ordered probit models, and linear models for two-stage least squares, random effects GLS and fixed effects, in Panels A, B, C, and D, respectively. The model's first three panels confirm the positive coefficient of financial literacy on the frequency of unspent income. The coefficients are significant at the 1% level and of a high magnitude. Moreover, the fixed effects model in Panel D shows a positive interaction term for the within individuals effect of financial literacy. Hence, literate individuals in 2009 are more likely to save more frequently, compared to the remainder.

[Insert Table 11 about here]

5.3 Self-assessed literacy versus objective literacy

One last issue that remains to be addressed is the robustness of our main findings when using self-assessed financial literacy as the main independent variable. All self-assessed measures are likely to suffer from biases due to non-standard beliefs about own capabilities, such as overconfidence (Kruger, 1999). Hence, it could be likely that those who consider themselves as highly financially literate are also more prone particular behaviours, such as high debt acquisition, etc. *Table 12* summarises the results for the main six variables of interest. The results in Table 1 have already shown that self-assessed financial literacy exerts a similar impact on the likelihood of owning a bank account as the other two measures. The results in Table 12 confirm this is largely the case

with respect to the remaining variables of interest. Hence, individuals with higher self-assessed financial literacy are more likely to acquire formal credit, exhibit spending adequacy and consume more. They are also more likely to have income unspent and on a more frequent basis. The only outcome of interest in which self-assessed literacy fails to confirm the previous results is with respect to informal finance. In Panel B, the financial literacy coefficient renders a positive sign that is statistically insignificant. This can either be interpreted as due to the difference in definition or our earlier assertion that informal credit is used for unexpected expenses or in unexpected situations (e.g. job losses), regardless of financial literacy or self-assessed abilities.

[Insert Table 12 about here]

6. Conclusion

Our study contributes to the financial literacy literature by examining its association with both financial and real consequences in a relatively understudied context, that of an emerging market during the 2009 financial crisis. Even though consumer borrowing is increasing very rapidly in Russia, we find that 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 address some novel questions: For instance, what is the level of financial literacy in a country without a legacy of consumer credit or a precedent of financial education? Does the relationship between financial literacy and the use of financial services hold for individuals over time? Do higher levels of financial literacy affect financial vulnerability during a crises?

First, we find that financial literacy is significantly related to greater participation in formal financial markets and negatively related to the use of informal sources of borrowing. Second, individuals with higher financial literacy are also significantly more likely to report greater unspent income and less likely to report lower levels of spending. Third, the relationship between financial literacy and the level of unspent income is higher during the financial crisis, after controlling for household characteristics.

The current financial crisis has generated interest in better understanding how to promote more responsible and prudent individual borrowing and saving behavior. Notably, we find that all measures of financial literacy (including self-assessed knowledge) increased during the financial crisis, which might be explained by increased attention to financial issues in the media or a rise in individuals' interest to understand their own financial risks. We leave this intriguing finding to future research.

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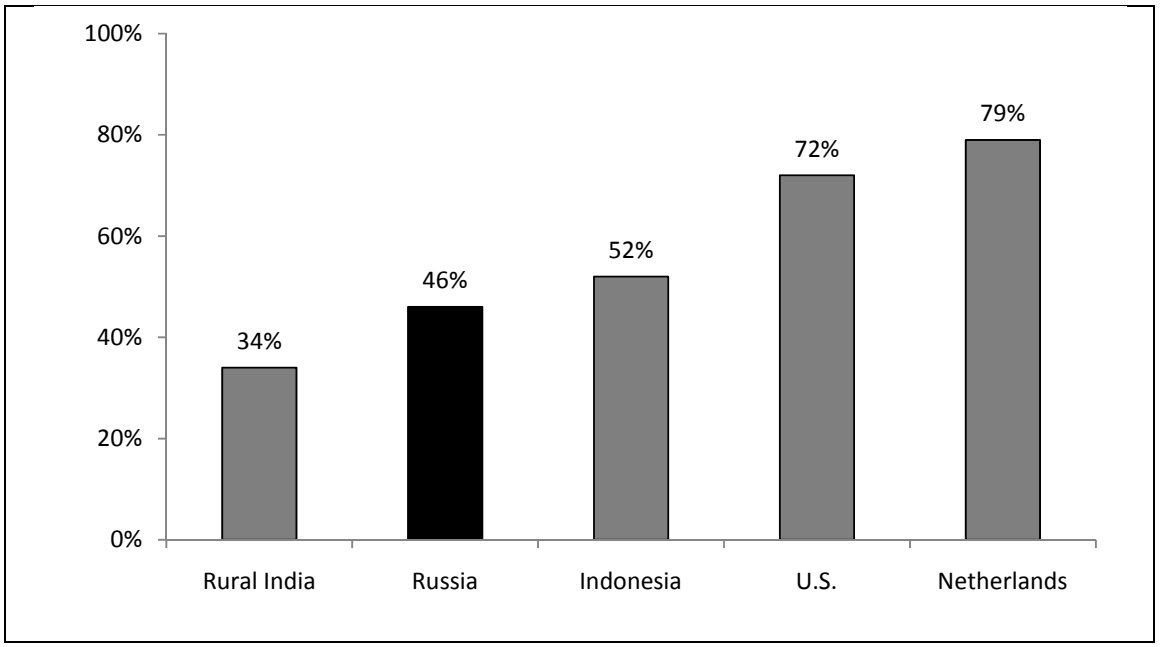
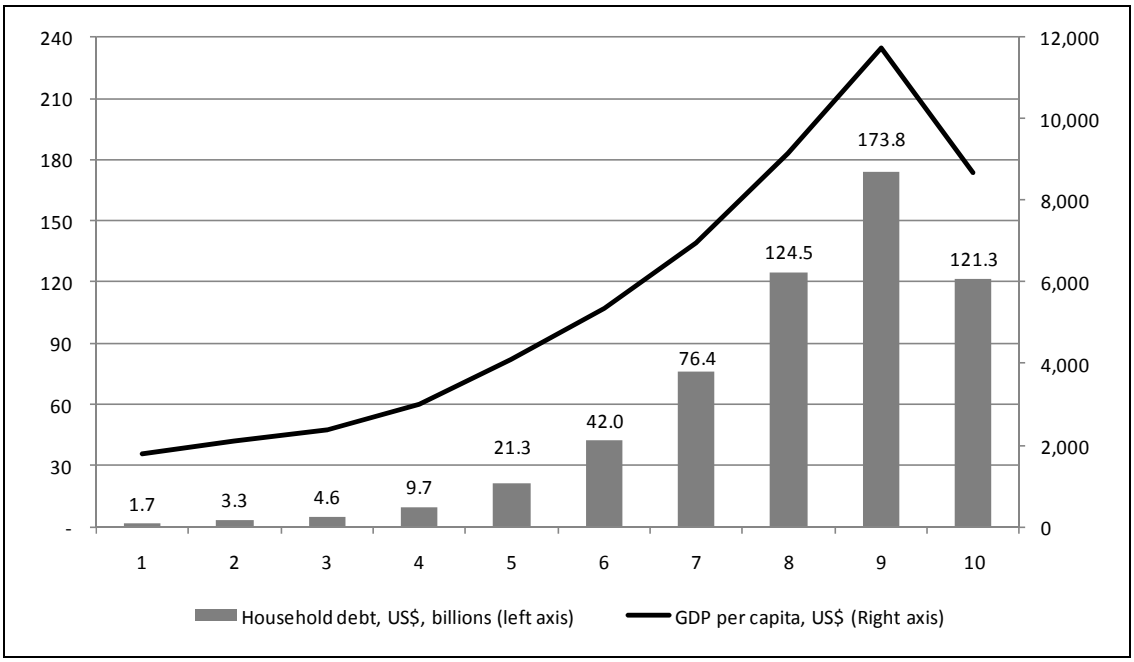
Figure 1: Financial Literacy, % of individuals answering correctly



Source: Cole, et al. (2010); the authors; Cole, et al. (2010); Lusardi and Mitchell (2007a); van Rooij, et al. (2008), respectively.

Figure 2: Russian Household Debt (US$, billions) and Per Capita Income (US$)



Source: WB-WDI Statistics (2010)

Table 1
Summary statistics in the pooled sample

	Pooled
#Obs.	***2,148***
Male	43.9%
Single Person Household	11.6%
Age	45.13
Urban region	28.2%
Has experienced negative income shock in last year	35.9%
Education:	
Primary or Incomplete	8.4%
Secondary	29.9%
Vocational-Technical	38.4%
Higher or incomplete higher	23.4%
Occupation:	
Skilled Non-Manual	9.0%
Skilled Manual	26.9%
Unskilled Non-Manual	13.5%
Unskilled Manual	3.1%
Entrepreneur	2.8%
Unemployed	0.9%
Pensioner	25.5%
Other	18.3%
Family Income	20,354.3
- 1st Quartile - (lowest)	26.3%
- 2nd Quartile -	25.1%
- 3rd Quartile -	23.1%
- 4th Quartile - (highest)	25.6%
Federal region:	
Central	27.1%
North-Western	10.0%
Southern	17.3%
Volga	22.9%
Urals	5.8%
Siberian	11.3%
Far-Eastern	5.7%
Financial Penetration:	
Bank Account	34.4%
Formal Credit	17.9%
Informal Credit	14.9%
Financial Vulnerability:	
Low Spending	31.6%
Low Spending Index (1-5)	3.22
Unspent Income	39.4%
Unspent Income Index (1-5)	2.36
Financial Literacy:	
Fin. Literacy: Index	0.00
Fin. Literacy: #Correct Responses	1.85
Fin. Literacy: Self-Assessment	2.55
Regional statistics (by 2-digit region):	
Total number of newspapers	55.80
Total number of universities	32.65
Total number of bank branches	61.16

Table 2

Panel A: Changes in main variables

	2008, not 2009		2009, not 2008	
	%	(#Obs.)	%	(#Obs.)
Bank Account	0.0%	(0)	1.2%	(13)
Formal Credit	12.2%	(131)	11.8%	(127)
Informal Credit	13.0%	(140)	9.0%	(97)
Low Spending	13.8%	(148)	16.8%	(180)
Decreased Level of Spending	22.5%	(242)	27.5%	(295)
Unspent Income	16.1%	(173)	26.9%	(289)
Increased Level of Unspent Income	25.1%	(270)	44.3%	(476)
Negative Income Shock	22.4%	(240)	23.8%	(256)

Panel B: Tabulation of ordinal variables

	(1) Low Spending			(2) Unspent Income			(3) Fin. Literacy: Self-Assessment		
	Total	2008	2009	Total	2008	2009	Total	2008	2009
- 1 -	0.4%	0.2%	0.7%	31.3%	37.6%	25.0%	17.3%	20.5%	14.2%
- 2 -	16.6%	17.7%	15.4%	29.3%	28.4%	30.2%	29.3%	33.2%	25.5%
- 3 -	50.7%	51.6%	49.9%	22.6%	22.3%	22.9%	36.9%	35.0%	38.6%
- 4 -	24.9%	23.2%	26.7%	6.1%	5.4%	6.8%	14.4%	9.4%	19.3%
- 5 -	7.3%	7.4%	7.3%	10.7%	6.3%	15.1%	2.1%	1.8%	2.4%

Table 3

Summary Statistics of Financial Literacy Questions, 2008 and 2009 Surveys

Panel A: Summary Statistics

Variable	Definition	Year	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	2008	41.43%	31.19%	27.37%
		2009	34.64%	32.02%	33.33%
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.	2008	23.37%	28.31%	48.32%
		2009	35.94%	14.06%	50.00%
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?	2008	45.62%	31.47%	22.91%
		2009	50.47%	24.12%	25.42%
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%?	2008	69.55%	9.12%	21.32%
		2009	69.55%	8.38%	22.07%

Panel B: Distribution of the Number of Answer Responses

	Percent of Individuals with Indicated Responses (out of four questions)				
	0	**1**	**2**	**3**	**4**
2008					
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
2009					
Correct Response	16.57	21.60	24.37	23.56	10.89
Incorrect Response	45.16	35.57	15.18	3.72	0.37
Difficulty Answering	39.57	23.09	14.90	11.82	10.61

Table 4

Summary statistics by financial literacy measure

	(A) Financial Literacy Index		(B) #Correct responses		(C) Self-Assessment	
	High	Low	High	Low	High	Low
	≥median	<median	[2, 4]	[0, 2)	[3, 5]	[1, 3)
#Obs.	*986*	*1,162*	*1,314*	*834*	*1,115*	*974*
Male	46.7%**	41.5%	45.8%**	40.8%	47.6%***	39.2%
Single Person Household	8.7%	14.0%***	9.1%	15.6%***	8.8%	14.9%***
Age	41.36	48.33***	42.06	49.97***	41.44	49.26***
Has experienced income shock in the last year	37.0%	35.0%	37.4%*	33.6%	36.0%	35.5%
Urban region	32.2%***	24.9%	32.3%***	21.8%	31.3%***	25.2%
Education:						
Primary or Incomplete	4.3%	11.9%***	5.1%	13.6%***	3.2%	14.2%***
Secondary	26.3%	33.0%***	26.9%	34.7%***	25.7%	34.2%***
Vocational-Technical	41.1%**	36.1%	40.0%**	35.7%	40.5%**	36.2%
Higher or incomplete higher	28.4%***	19.1%	28.0%***	16.1%	30.6%***	15.4%
Occupation:						
Skilled Non-Manual	11.7%***	6.8%	11.1%***	5.8%	12.9%***	4.8%
Skilled Manual	30.0%***	24.3%	29.5%***	22.8%	29.9%***	24.2%
Unskilled Non-Manual	15.6%***	11.7%	15.3%***	10.7%	14.5%	12.1%
Unskilled Manual	3.0%	3.1%	3.0%	3.2%	3.2%	2.7%
Entrepreneur	3.1%	2.5%	2.9%	2.6%	3.4%*	2.2%
Unemployed	0.8%	1.0%	0.8%	1.2%	0.5%	1.4%**
Pensioner	15.5%	34.0%***	17.1%	38.7%***	16.8%	35.1%***
Other	20.2%**	16.6%	20.3%***	15.0%	18.8%	17.5%
Family Income	23,511.1***	17,675.7	22,912.8***	16,323.3	23,378.1***	17,012.9
- 1st Quartile - (lowest)	18.1%	33.2%***	19.9%	36.2%***	19.1%	34.4%***
- 2nd -	25.3%	24.9%	24.7%	25.5%	23.1%	26.9%**
- 3rd -	24.4%	22.0%	24.1%	21.6%	25.7%***	20.5%
- 4th - (highest)	32.3%***	19.9%	31.2%***	16.7%	32.1%***	18.2%
Federal Region:						
Central	27.9%	26.4%	29.1%***	24.0%	28.2%	25.7%
North Western	11.0%	9.1%	10.5%	9.1%	10.5%	9.7%
Southern	14.5%	19.7%***	15.4%	20.4%***	15.5%	18.9%**
Volga	24.3%	21.7%	23.1%	22.7%	21.1%	25.5%**
Urals	5.6%	5.9%	6.2%	5.2%	5.7%	6.2%
Siberian	11.5%	11.1%	10.9%	11.9%	12.1%	9.9%
Far-Eastern	5.3%	6.0%	5.0%	6.8%*	7.0%***	4.3%
Financial Penetration:						
Bank Account	37.2%**	32.0%	36.9%***	30.5%	38.8%***	29.7%
Formal Credit	21.5%***	14.8%	20.6%***	13.6%	23.2%***	12.4%
Informal Credit	14.4%	15.4%	15.1%	14.8%	14.9%	15.4%
Financial Vulnerability:						
Low Spending	24.1%	37.9%***	24.6%	42.6%***	24.4%	40.1%***
Low Spending Index	3.06	3.36***	3.08	3.45***	3.04	3.42***
Unspent Income	44.9%***	34.7%	44.8%***	30.9%	48.4%***	29.5%
Unspent Income Index	2.49***	2.24	2.50***	2.13	2.61***	2.08

Notes: * p<0.10, ** p<0.05, *** p<0.01: From a t-test of mean differences between individuals with and low financially literacy.

Table 5

Bank Account: Lagged-value models; Marginal Effects and Robust Standard Errors

Dependent variable: Bank Account (1/0)	**(A) Probit Model**				**(B) Probit Model with IV**		
	(1)	**(2)**	**(3)**	**(4)**	**(1)**	**(2)**	**(3)**
Financial Literacy: Index	-	0.022*	-	-	0.037*	-	-
		[0.013]			[0.019]		
Financial Literacy: #Correct Responses	-	-	0.018*	-	-	0.030*	-
			[0.010]			[0.016]	
Financial Literacy: Self-Assessment	-	-	-	0.031*	-	-	0.157***
				[0.017]			[0.057]
Male	0.036	0.035	0.035	0.033	0.033	0.033	0.006
	[0.032]	[0.033]	[0.033]	[0.033]	[0.031]	[0.031]	[0.032]
Single Person Household	0.035	0.036	0.036	0.036	0.035	0.035	0.055
	[0.053]	[0.053]	[0.053]	[0.054]	[0.050]	[0.050]	[0.047]
Log(Age)	0.129**	0.132**	0.132**	0.125**	0.129***	0.129***	0.125***
	[0.052]	[0.052]	[0.052]	[0.054]	[0.050]	[0.050]	[0.047]
Has experienced income shock in the last year	-0.019	-0.016	-0.016	-0.014	-0.014	-0.014	-0.001
	[0.032]	[0.032]	[0.032]	[0.033]	[0.031]	[0.031]	[0.030]
Education (Ref:. Primary/Incomplete)							
Secondary	0.110*	0.107	0.107	0.073	0.098	0.098	0.014
	[0.067]	[0.067]	[0.067]	[0.068]	[0.062]	[0.062]	[0.064]
Vocational-Technical	0.140**	0.134**	0.134**	0.107	0.121**	0.121**	0.014
	[0.065]	[0.065]	[0.065]	[0.067]	[0.061]	[0.061]	[0.072]
Higher or incomplete higher	0.211***	0.199***	0.199***	0.154**	0.177***	0.176***	0.017
	[0.072]	[0.073]	[0.073]	[0.075]	[0.066]	[0.066]	[0.088]
Family Income (Ref: - 1st - (lowest))							
- 2nd -	0.057	0.055	0.055	0.049	0.051	0.051	0.033
	[0.047]	[0.047]	[0.047]	[0.048]	[0.044]	[0.044]	[0.042]
- 3rd -	0.082*	0.080	0.080	0.095*	0.075*	0.075*	0.057
	[0.049]	[0.049]	[0.049]	[0.050]	[0.045]	[0.045]	[0.047]
- 4th - (highest)	0.046	0.040	0.040	0.050	0.035	0.035	0.023
	[0.057]	[0.057]	[0.057]	[0.058]	[0.054]	[0.054]	[0.052]
No. of Observations	1,074	1,074	1,074	1,033	1,074	1,074	1,033
Pseudo R^2	0.039	0.041	0.041	0.044	-	-	-
Log-Likelihood	-668.0	-667.1	-667.1	-640.6	-1,567.4	-1,784.4	-1,963.5
Wald χ^2	51.95***	53.82***	53.76***	55.88***	56.25***	56.30***	71.17***
Predicted Probability	0.3502	0.3503	0.3503	0.3525			
Wald χ^2 test of exogeneity					1.86	1.90	3.52*
Partial R^2 of excluded instruments:					0.0238	0.0231	0.0019
Test of excluded instruments F(2, 1050)					12.87***	12.41**	0.93
Additional statistics based on Linear Probability Models (available upon request)							
(a) Kleibergen-Paap rk LM statistic: χ^2 (2)					27.95***	27.07***	1.89
(a) Kleibergen-Paap rk Wald statistic: χ^2 (2)					26.39***	25.44***	1.91
(b) Kleibergen-Paap Wald rk F statistic					12.87***	12.41**	0.93
(c) Anderson-Rubin Wald test: F(2,1050)					1.94	1.94	1.62
(c) Anderson-Rubin Wald test : χ^2(2)					3.97	3.97	3.33
(c) Stock-Wright LM S statistic: χ^2 (2)					3.91	3.91	3.28
(d) Hansen J statistic: χ^2 (1)					1.482	1.489	1.914

Notes: * p<0.10, ** p<0.05, *** p<0.01. The specifications also include a constant term and dummy variables for occupation (8) and federal region (7). The observed probability is 0.1769 for Panel (A). (a) denotes underidentification tests, (b) weak identification test, (c) denotes weak-instrument-robust inference (tests of joint significance of endogenous regressors in main equation), and (d) denotes overidentification tests. Stock-Yogo weak ID test critical values: 10% maximal IV size: 19.93.

Table 6
Formal Credit

Dependent Variable: Formal Credit (1/0)	**(A) Lagged Probit Model (Marginal Effects)**			**(B) Lagged Probit Model with IV (Marginal Effects)**		**(C) Probit Model with Random Effects (Marginal Effects)**		**(D) Logit Model with Fixed Effects (Odds Ratios)**	
	(A1)	***(A2)***	***(A3)***	***(B1)***	***(B2)***	***(C1)***	***(C2)***	***(D1)***	***(D2)***
Fin. Literacy: Index	-	0.032***	-	0.030**	-	0.026***	-	1.392***	-
		[0.012]		[0.015]		[0.009]		[0.147]	
Fin. Literacy: #Correct Responses	-	-	0.025***	-	0.024**	-	0.021***	-	1.328***
			[0.009]		[0.012]		[0.007]		[0.114]
Year 2009	-	-	-	-	-	-0.006	-0.006	0.920	0.918
						[0.015]	[0.015]	[0.118]	[0.118]
Male	-0.049**	-0.050**	-0.050**	-0.051**	-0.051**	-0.046**	-0.046**	-	-
	[0.024]	[0.024]	[0.024]	[0.024]	[0.024]	[0.019]	[0.019]		
Single Person Household	0.001	0.002	0.002	0.001	0.002	-0.037	-0.037	-	-
	[0.043]	[0.043]	[0.043]	[0.043]	[0.043]	[0.032]	[0.032]		
Log(Age)	-0.053	-0.048	-0.048	-0.048	-0.048	-0.043	-0.043	-	-
	[0.039]	[0.039]	[0.039]	[0.039]	[0.039]	[0.030]	[0.030]		
Has experienced income shock	-0.003	0.001	0.001	0.001	0.001	0.018	0.018	1.173	1.164
in the last year	[0.025]	[0.025]	[0.025]	[0.025]	[0.025]	[0.017]	[0.017]	[0.214]	[0.213]
Education (Ref:. Primary/Incomplete)									
Secondary	-0.012	-0.017	-0.017	-0.017	-0.017	0.029	0.029	-	-
	[0.051]	[0.050]	[0.050]	[0.052]	[0.052]	[0.042]	[0.042]		
Vocational-Technical	-0.029	-0.039	-0.038	-0.039	-0.039	-0.005	-0.005	-	-
	[0.051]	[0.050]	[0.050]	[0.052]	[0.052]	[0.042]	[0.042]		
Higher or incomplete higher	0.011	-0.007	-0.007	-0.006	-0.006	0.025	0.025	-	-
	[0.056]	[0.054]	[0.054]	[0.055]	[0.055]	[0.044]	[0.044]		
Family Income (Ref: - 1st - (lowest))									
- 2nd -	-0.003	-0.005	-0.005	-0.005	-0.005	0.001	0.001	-	-
	[0.034]	[0.033]	[0.033]	[0.034]	[0.034]	[0.025]	[0.025]		
- 3rd -	0.011	0.01	0.01	0.010	0.010	0.012	0.012	-	-
	[0.036]	[0.036]	[0.037]	[0.036]	[0.036]	[0.026]	[0.026]		
- 4th - (highest)	-0.025	-0.032	-0.032	-0.033	-0.033	0.006	0.006	-	-
	[0.038]	[0.037]	[0.037]	[0.040]	[0.040]	[0.029]	[0.029]		
No. of Observations	1,074	1,074	1,074	1,074	1,074	2,148	2,148	516	516
Pseudo R^2	0.084	0.090	0.090					0.032	0.036
Log-Likelihood	-464.8	-461.5	-461.6	-1,362.8	-1,577.5			-173.0	-172.4
Wald χ^2 /LR for LogitFE	86.86***	87.69***	87.74***	86.52***	86.59***			11.62***	12.85***
Predicted Probability	0.1767	0.1766	0.1766						
Wald χ^2 test of exogeneity				0.03	0.02				
Partial R^2 of excluded instruments:				0.0238	0.0231				
Test of excluded instruments F(2, 1050)				12.87***	12.41***				
Additional statistics based on Linear Probability Models (available upon request)									
(a) Kleibergen-Paap rk LM statistic $\chi^2(2)$				27.95***	27.07***				
(a) Kleibergen-Paap rk Wald statistic $\chi^2(2)$				26.39***	25.44***				
(b) Kleibergen-Paap Wald rk F-statistic				12.87***	12.41**				
(c) Anderson-Rubin Wald test: F(2,1050)				1.68	1.68				
(c) Anderson-Rubin Wald test: Chi-sq(2)				3.45	3.45				
(c)Stock-Wright LM S statistic Chi-sq(2)				3.43	3.43				
(d) Hansen J statistic Chi-sq(1)				3.423*	3.420*				

Notes: The comments in Table 5 hold.

Table 7
Informal Credit

Dependent Variable: Informal Credit (1/0)	**(A) Lagged Probit Model (Marginal Effects)**			**(B) Lagged Probit Model with IV (Marginal Effects)**		**(C) Probit Model with Random Effects (Marginal Effects)**		**(D) Logit Model with Fixed Effects (Odds Ratios)**	
	(A1)	***(A2)***	***(A3)***	***(B1)***	***(B2)***	***(C1)***	***(C2)***	***(D1)***	***(D2)***
Financial Literacy: Index	-	-0.017*	-	-0.038***		-0.009	-	0.898	-
		[0.010]		[0.014]		[0.008]		[0.110]	
Fin. Literacy: #Correct Responses	-	-	-0.013*		-0.031***	-	-0.008	-	0.905
			[0.006]		[0.012]		[0.006]		[0.091]
Year 2009	-	-	-	-	-	-0.036***	-0.036**	0.702***	0.704***
						[0.014]	[0.014]	[0.095]	[0.095]
Male	-0.006	-0.005	-0.005	-0.004	-0.004	-0.017	-0.017	-	-
	[0.021]	[0.021]	[0.021]	[0.021]	[0.021]	[0.017]	[0.017]		
Single Person Household	0.107**	0.105**	0.105**	0.087***	0.088***	-0.012	-0.012	-	-
	[0.047]	[0.046]	[0.046]	[0.033]	[0.033]	[0.027]	[0.027]		
Log(Age)	-0.067*	-0.068**	-0.068**	-0.074**	-0.074**	-0.041	-0.041	-	-
	[0.034]	[0.035]	[0.035]	[0.036]	[0.036]	[0.027]	[0.027]		
Has experienced income shock	0.052**	0.049**	0.049**	0.048**	0.048**	0.079***	0.079***	1.766***	1.768***
in the last year	[0.023]	[0.022]	[0.022]	[0.021]	[0.021]	[0.015]	[0.015]	[0.357]	[0.358]
Education (Ref:. Primary/Incomplete)									
Secondary	0.088*	0.092*	0.091*	0.089**	0.089**	0.052	0.052	-	-
	[0.053]	[0.052]	[0.052]	[0.044]	[0.044]	[0.033]	[0.033]		
Vocational-Technical	0.103**	0.111**	0.110**	0.113***	0.113***	0.048	0.048	-	-
	[0.050]	[0.049]	[0.049]	[0.043]	[0.043]	[0.033]	[0.033]		
Higher or incomplete higher	0.009	0.020	0.020	0.030	0.030	-0.021	-0.02	-	-
	[0.049]	[0.050]	[0.050]	[0.048]	[0.048]	[0.037]	[0.037]		
Family Income (Ref: - 1st - (lowest))									
- 2nd -	0.043	0.044	0.044	0.047	0.047	0.004	0.004	-	-
	[0.033]	[0.033]	[0.033]	[0.029]	[0.029]	[0.021]	[0.021]		
- 3rd -	0.049	0.051	0.051	0.052*	0.052*	-0.043*	-0.043*	-	-
	[0.034]	[0.034]	[0.034]	[0.031]	[0.031]	[0.024]	[0.024]		
- 4th - (highest)	0.002	0.005	0.004	0.013	0.013	-0.042	-0.042	-	-
	[0.037]	[0.038]	[0.038]	[0.038]	[0.038]	[0.027]	[0.027]		
No. of Observations	1,074	1,074	1,074	1,074	1,074	2,148	2,148	474	474
Pseudo R^2	0.067	0.070	0.070					0.050	0.051
Log-Likelihood	-386.2	-384.9	-385.0	-1,283.7	-1,498.2	-851.4	-851.2	-156.0	-155.9
Wald χ^2 /LR χ^2 in (D)	58.08***	64.77***	63.78***	75.25***	75.20***	77.08***	77.29***	16.58***	16.81***
LR χ^2 (ρ=0)						10.79***	10.78***		
Predicted Probability	0.1294	0.1293	0.1293						
Wald χ^2 test of exogeneity				4.97**	5.66**				
Partial R^2 of excluded instruments:				0.0238	0.0231				
Test of excluded instruments F(2, 1050)				12.87***	12.41***				
Additional statistics based on Linear Probability Models (available upon request)									
(a) Kleibergen-Paap rk LM statistic $\chi^2(2)$				27.95***	27.07***				
(a) Kleibergen-Paap rk Wald statistic $\chi^2(2)$				26.39***	25.44***				
(b) Kleibergen-Paap Wald rk F-statistic				12.87***	12.41**				
(c) Anderson-Rubin Wald test: F(2,1050)				1.85	1.85				
(c) Anderson-Rubin Wald test $\chi^2(2)$				3.79	3.79				
(c) Stock-Wright LM S statistic $\chi^2(2)$				3.72	3.72				
(d) Hansen J statistic $\chi^2(1)$				2.431	2.436				

Notes: The notes in Table 5 hold.

Table 8
Low Spending

Dependent Variable: Low Spending (1/0)	(A) Lagged Probit Model (Marginal Effects)			(B) Lagged Probit Model with IV (Marginal Effects)		(C) Probit Model with Random Effects (Marginal Effects)		(D) Logit Model with Fixed Effects (Odds Ratios)	
	(A1)	*(A2)*	*(A3)*	*(B1)*	*(B2)*	*(C1)*	*(C2)*	*(D1)*	*(D2)*
Fin. Literacy: Index	-	-0.034**	-	-0.031*		-0.042***	-0.038***	0.813**	0.828*
		[0.016]		[0.019]		[0.010]	[0.014]	[0.069]	[0.094]
Fin. Literacy: #Correct Responses	-	-	-0.028**		-0.026*	-	-	-	-
			[0.013]		[0.016]				
Year 2009	-	-	-	-	-	0.053***	0.052***	1.218*	1.213*
						[0.017]	[0.017]	[0.138]	[0.140]
2009*(Fin. Lit. Index)	-	-	-	-	-	-	-0.008	-	0.964
							[0.018]		[0.141]
Male	-0.028	-0.026	-0.026	-0.021	-0.021	-0.007	-0.007	-	-
	[0.032]	[0.032]	[0.032]	[0.026]	[0.026]	[0.022]	[0.022]		
Single Person Household	0.093*	0.092*	0.092*	0.070*	0.070*	0.069**	0.068**	-	-
	[0.052]	[0.052]	[0.052]	[0.038]	[0.038]	[0.030]	[0.030]		
Log(Age)	0.153***	0.147***	0.146***	0.120***	0.119***	0.088**	0.088**	-	-
	[0.053]	[0.053]	[0.053]	[0.044]	[0.044]	[0.037]	[0.037]		
Has experienced income shock in the last year	0.039	0.036	0.036	0.029	0.029	0.062***	0.063***	1.581***	1.589***
	[0.033]	[0.032]	[0.032]	[0.026]	[0.026]	[0.019]	[0.019]	[0.258]	[0.262]
Secondary Education	0.052	0.054	0.054	0.044	0.044	0.065*	0.066*	-	-
	[0.058]	[0.058]	[0.058]	[0.046]	[0.045]	[0.039]	[0.039]		
Vocational-Technical Education	0.031	0.041	0.041	0.034	0.034	0.053	0.053	-	-
	[0.056]	[0.056]	[0.056]	[0.045]	[0.045]	[0.039]	[0.039]		
Higher or incomplete higher	-0.001	0.018	0.018	0.016	0.017	0.028	0.028	-	-
	[0.061]	[0.062]	[0.062]	[0.051]	[0.051]	[0.044]	[0.044]		
- 2nd Income quartile	-0.229***	-0.227***	-0.227***	-0.223***	-0.223***	-0.220***	-0.220***	-	-
	[0.028]	[0.028]	[0.028]	[0.031]	[0.031]	[0.023]	[0.023]		
- 3rd Income quartile	-0.296***	-0.296***	-0.296***	-0.314***	-0.314***	-0.338***	-0.337***	-	-
	[0.026]	[0.026]	[0.026]	[0.032]	[0.032]	[0.025]	[0.025]		
- 4th Income quartile (highest)	-0.354***	-0.350***	-0.350***	-0.402***	-0.402***	-0.409***	-0.409***	-	-
	[0.026]	[0.027]	[0.027]	[0.041]	[0.041]	[0.031]	[0.031]		
No. of Observations	1,074	1,074	1,074	1,074	1,074	2,148	2,148	656	656
Pseudo R^2	0.229	0.232	0.232					0.035	0.035
Log-Likelihood	-506.7	-504.2	-504.2	-1,630.9	-1,870.0	-1,053.2	-1,053.1	-219.5	-219.5
Wald χ^2 / LR χ^2 in (D)	261.16***	264.85***	264.66***	264.78***	264.82***	276.3***	277.0***	15.73***	15.79***
LR χ^2 (ρ=0)						26.67***	26.45***		
Predicted Probability	0.3310	0.3309	0.3309						
Wald χ^2 test of exogeneity				0.05	0.07				
Partial R^2 of excluded instruments:				0.0238	0.0231				
Test of excluded instruments F(2, 1050)				12.87***	12.41***				
Additional statistics based on Linear Probability Models (available upon request)									
(a) Kleibergen-Paap rk LM statistic χ^2 (2)				27.95***	27.07***				
(a) Kleibergen-Paap rk Wald statistic χ^2 (2)				26.39***	25.44***				
(b) Kleibergen-Paap Wald rk F-statistic				12.87***	12.41**				
(c) Anderson-Rubin Wald test: F(2,1050)				1.58	1.58				
(c) Anderson-Rubin Wald test: χ^2(2)				3.24	3.24				
(c) Stock-Wright LM S-statistic: χ^2(2)				3.23	3.23				
(d) Hansen J statistic χ^2(1)				0.031	0.032				

Notes: The observed probability is 0.3305 for Panel (A). The remaining notes in Table 5 hold.

Table 9

Level of Spending

Dependent Variable: Level of Spending (1: high-5: low)	**(A) Lagged Ordered Probit Model (Coefficients)**			**(B) Lagged 2SLS Model (Coefficients)**		**(C) GLS Model with Random Effects (Coefficients)**		**(D) Fixed Effects Model (Coefficients)**	
	(A1)	***(A2)***	***(A3)***	***(B1)***	***(B2)***	***(C1)***	***(C2)***	***(D1)***	***(D2)***
Fin. Literacy: Index	-	-0.075**		-0.085**	-	-0.100***	-0.085***	-0.091***	-0.077**
		[0.036]		[0.038]		[0.016]	[0.022]	[0.023]	[0.030]
Fin. Literacy: #Correct Responses	-	-	-0.064**	-	-0.071**	-	-	-	-
			[0.029]		[0.032]				
Year 2009	-	-	-	-	-	0.085***	0.085***	0.056*	0.056*
						[0.027]	[0.027]	[0.029]	[0.029]
2009*(Fin. Lit. Index)	-	-	-	-	-	-	-0.030	-	-0.027
							[0.030]		[0.038]
Male	-0.043	-0.040	-0.040	-0.070	-0.070	-0.022	-0.022	-	-
	[0.074]	[0.074]	[0.074]	[0.047]	[0.047]	[0.037]	[0.037]		
Single Person Household	0.19	0.186	0.185	0.121	0.121	0.069	0.067	-	-
	[0.127]	[0.127]	[0.127]	[0.079]	[0.079]	[0.052]	[0.052]		
Log(Age)	0.296**	0.286**	0.286**	0.227***	0.226***	0.121**	0.121**	-	-
	[0.120]	[0.120]	[0.120]	[0.075]	[0.075]	[0.061]	[0.061]		
Has experienced income shock in the last year	0.045	0.038	0.038	0.076	0.077*	0.126***	0.130***	0.131***	0.134***
	[0.073]	[0.073]	[0.073]	[0.047]	[0.047]	[0.032]	[0.032]	[0.043]	[0.043]
Secondary Education	0.004	0.010	0.010	0.117	0.117	0.103	0.104	-	-
	[0.145]	[0.145]	[0.145]	[0.091]	[0.091]	[0.069]	[0.069]		
Vocational-Technical Education	-0.042	-0.022	-0.021	0.015	0.016	0.042	0.042	-	-
	[0.147]	[0.147]	[0.147]	[0.089]	[0.089]	[0.069]	[0.069]		
Higher or incomplete higher	-0.193	-0.161	-0.159	-0.089	-0.087	-0.034	-0.034	-	-
	[0.160]	[0.161]	[0.160]	[0.098]	[0.098]	[0.075]	[0.075]		
- 2nd Income quartile	-0.355***	-0.347***	-0.347***	-0.459***	-0.459***	-0.463***	-0.464***	-	-
	[0.100]	[0.100]	[0.100]	[0.070]	[0.070]	[0.046]	[0.046]		
- 3rd Income quartile	-0.344***	-0.339***	-0.339***	-0.639***	-0.639***	-0.674***	-0.674***	-	-
	[0.107]	[0.107]	[0.107]	[0.074]	[0.074]	[0.050]	[0.050]		
- 4th Income quartile (highest)	-0.580***	-0.564***	-0.564***	-0.903***	-0.902***	-0.900***	-0.899***	-	-
	[0.123]	[0.123]	[0.123]	[0.083]	[0.083]	[0.056]	[0.056]		
No. of Observations	1,044	1,044	1,044	1,044	1,044	2,101	2,101	2,101	2,101
R^2 (Overall)				0.323	0.323	0.291	0.291	0.026	0.027
Pseudo R^2	0.065	0.066	0.066						
Log-Likelihood	-1,183.8	-1,181.7	-1,181.5	-1,083.7	-1,083.7			-1,338.2	-1,337.7
F-statistic				20.88***	20.89***			9.13***	6.98***
Wald χ^2	155.66***	160.25***	161.12***			755.03***	755.98***		
Partial R^2 of excluded instruments:				0.0238	0.0231				
Test of excluded instruments F(2, 1050)				12.14***	11.59***				
Additional statistics based on Linear Probability Models (available upon request)									
(a) Kleibergen-Paap rk LM statistic χ^2 (2)				27.95***	27.07***				
(a) Kleibergen-Paap rk Wald statistic χ^2 (2)				26.39***	25.44***				
(b) Kleibergen-Paap Wald rk F-statistic				12.87***	12.41**				
(c) Anderson-Rubin Wald test F(2,1050)				2.46*	2.46*				
(c) Anderson-Rubin Wald test χ^2 (2)				5.03*	5.03*				
(c) Stock-Wright LM S-statistic χ^2 (2)				5.04*	5.04*				
(d) Hansen J statistic χ^2 (1)				0.005	0.006				

Notes: The remaining notes in Table 5 hold.

Table 10

Unspent Income

Dependent Variable: Unspent Income (1/0)	**(A) Lagged Probit Model (Marginal Effects)**			**(B) Lagged Probit Model with IV (Marginal Effects)**		**(C) Probit Model with RE (ME)**		**(D) Logit Model with FE (Odds Ratios)**	
	(A1)	***(A2)***	***(A3)***	***(B1)***	***(B2)***	***(C1)***	***(C2)***	***(D1)***	***(D2)***
Fin. Literacy: Index	-	0.053***	-	0.041**	-	0.056***	0.037**	1.057	0.991
		[0.017]		[0.020]		[0.011]	[0.016]	[0.082]	[0.099]
Fin. Literacy: #Correct Responses	-	-	0.045***	-	0.033**	-	-	-	-
			[0.014]		[0.016]				
Year 2009	-	-	-	-	-	0.100***	0.098***	1.689***	1.679***
						[0.020]	[0.020]	[0.164]	[0.164]
2009*(Fin. Lit. Index)	-	-	-	-	-	-	0.036*	-	1.137
							[0.021]		[0.141]
Male	0.048	0.046	0.046	0.044	0.044	0.036	0.036	-	-
	[0.034]	[0.034]	[0.034]	[0.032]	[0.032]	[0.023]	[0.023]		
Single Person Household	-0.003	0.001	0.001	0.001	0.001	0.024	0.026	-	-
	[0.054]	[0.054]	[0.054]	[0.051]	[0.051]	[0.036]	[0.036]		
Log(Age)	-0.088	-0.081	-0.081	-0.078	-0.078	-0.051	-0.05	-	-
	[0.056]	[0.056]	[0.056]	[0.052]	[0.052]	[0.039]	[0.039]		
Has experienced income shock	0.004	0.010	0.010	0.008	0.008	-0.070***	-0.073***	0.676***	1.679***
in the last year	[0.034]	[0.034]	[0.034]	[0.032]	[0.032]	[0.022]	[0.022]	[0.100]	[0.164]
Secondary Education	-0.055	-0.061	-0.061	-0.056	-0.056	-0.060	-0.062	-	-
	[0.064]	[0.064]	[0.064]	[0.061]	[0.061]	[0.044]	[0.044]		
Vocational-Technical Education	-0.068	-0.084	-0.084	-0.076	-0.076	-0.056	-0.057	-	-
	[0.064]	[0.064]	[0.064]	[0.061]	[0.061]	[0.044]	[0.044]		
Higher or incomplete higher	-0.035	-0.061	-0.062	-0.053	-0.053	-0.023	-0.023	-	-
	[0.070]	[0.070]	[0.070]	[0.067]	[0.067]	[0.048]	[0.048]		
- 2nd Income quartile	0.156***	0.152***	0.152***	0.143***	0.143***	0.058*	0.059*	-	-
	[0.048]	[0.048]	[0.048]	[0.044]	[0.044]	[0.032]	[0.032]		
- 3rd Income quartile	0.145***	0.142***	0.142***	0.133***	0.133***	0.111***	0.110***	-	-
	[0.050]	[0.050]	[0.050]	[0.046]	[0.046]	[0.034]	[0.034]		
- 4th Income quartile (highest)	0.267***	0.257***	0.257***	0.245***	0.245***	0.194***	0.194***	-	-
	[0.054]	[0.055]	[0.055]	[0.053]	[0.053]	[0.037]	[0.037]		
No. of Observations	1,074	1,074	1,074	1,074	1,074	2,148	2,148	924	924
Pseudo R^2	0.055	0.062	0.062					0.058	0.06
Log-Likelihood	-698.0	-693.0	-692.6	-1,594.0	-1,810.4	-1,345.9	-1,344.5	-301.6	-301.1
Wald χ^2 /LR χ^2 in (D)	78.00***	83.70***	84.33***	79.47***	79.44***	158.1***	160.7***	37.23***	38.30***
LR χ^2 (ϱ=0)						2.12*	2.08*		
Predicted Probability	0.4481	0.4483	0.4483						
Wald χ^2 test of exogeneity				0.54	0.81				
Partial R^2 of excluded instruments:				0.0238	0.0231				
Test of excluded instruments F(2, 1050)				12.87***	12.41***				
Additional statistics based on Linear Probability Models (available upon request)									
(a) Kleibergen-Paap rk LM statistic $\chi^2(2)$				27.95***	27.07***				
(a) Kleibergen-Paap rk Wald statistic $\chi^2(2)$				26.39***	25.44***				
(b) Kleibergen-Paap Wald rk F-statistic				12.87***	12.41***				
(c) Anderson-Rubin Wald test: F(2,1050)				1.06	1.06				
(c) Anderson-Rubin Wald test: $\chi^2(2)$				2.17	2.17				
(c) Stock-Wright LM S-statistic: $\chi^2(2)$				2.16	2.16				
(d) Hansen J statistic $\chi^2(1)$				0.331	0.331				

Notes: The observed probability is 0.4479 for Panel (A). The remaining notes in Table 5 hold.

Table 11

Level of Unspent Income

Dependent Variable: Level of Unspent Income (1: low-5: high)	**(A) Lagged Ordered Probit Model (Coefficients)**			**(B) Lagged 2SLS Model (Coefficients)**		**(C) GLS Model with Random Effects (Coefficients)**		**(D) Fixed Effects Model (Coefficients)**	
	(A1)	***(A2)***	***(A3)***	***(B1)***	***(B2)***	***(C1)***	***(C2)***	***(D1)***	***(D2)***
Fin. Literacy: Index	-	0.109***	-	0.164***		0.137***	0.062	0.021	-0.056
		[0.036]		[0.055]		[0.028]	[0.039]	[0.040]	[0.052]
Fin. Literacy: #Correct Responses	-	-	0.093***		0.134***	-	-	-	-
			[0.029]		[0.044]				
Year 2009	-	-	-	-	-	0.399***	0.399***	0.425***	0.425***
						[0.050]	[0.050]	[0.050]	[0.050]
2009*(Fin. Lit. Index)	-	-	-	-	-	-	0.148***	-	0.150**
							[0.052]		[0.064]
Male	0.126*	0.123*	0.123*	0.137	0.138	0.130**	0.130**	-	-
	[0.071]	[0.071]	[0.071]	[0.085]	[0.085]	[0.060]	[0.060]		
Single Person Household	-0.028	-0.023	-0.023	0.002	0.002	0.075	0.085	-	-
	[0.119]	[0.120]	[0.120]	[0.138]	[0.138]	[0.090]	[0.090]		
Log(Age)	-0.098	-0.083	-0.083	-0.076	-0.076	-0.086	-0.085	-	-
	[0.114]	[0.115]	[0.115]	[0.138]	[0.138]	[0.100]	[0.099]		
Has experienced income shock in the last year	0.037	0.049	0.049	0.073	0.072	-0.235***	-0.250***	-0.259***	-0.277***
	[0.072]	[0.072]	[0.072]	[0.085]	[0.085]	[0.055]	[0.055]	[0.073]	[0.073]
Secondary Education	0.015	0.004	0.004	-0.040	-0.040	-0.116	-0.122	-	-
	[0.146]	[0.147]	[0.147]	[0.164]	[0.164]	[0.113]	[0.113]		
Vocational-Technical Education	-0.042	-0.074	-0.074	-0.121	-0.121	-0.115	-0.117	-	-
	[0.149]	[0.150]	[0.150]	[0.168]	[0.168]	[0.113]	[0.112]		
Higher or incomplete higher	0.139	0.088	0.085	0.035	0.034	0.022	0.021	-	-
	[0.158]	[0.159]	[0.159]	[0.183]	[0.183]	[0.123]	[0.123]		
- 2nd Income quartile	0.303***	0.295***	0.295***	0.336***	0.336***	0.152*	0.156**	-	-
	[0.101]	[0.101]	[0.101]	[0.117]	[0.117]	[0.079]	[0.079]		
- 3rd Income quartile	0.257**	0.251**	0.250**	0.291**	0.290**	0.314***	0.310***	-	-
	[0.107]	[0.107]	[0.107]	[0.123]	[0.123]	[0.086]	[0.086]		
- 4th Income quartile (highest)	0.531***	0.506***	0.506***	0.635***	0.636***	0.477***	0.475***	-	-
	[0.124]	[0.124]	[0.124]	[0.149]	[0.149]	[0.096]	[0.096]		
No. of Observations	1,074	1,074	1,074	1,074	1,074	2,148	2,148	2148	2148
R^2 (Overall)				0.087	0.088	0.107	0.110	0.074	0.079
Pseudo R^2	0.027	0.030	0.030						
Log-Likelihood	-1,581.5	-1,576.8	-1,576.4	-1,786.9	-1,786.5			-2,599.7	-2,594.3
F-statistic				4.24***	4.25***			28.45***	22.80***
Wald χ^2	90.43***	100.83***	101.95***			245.40***	254.13***		
Partial R^2 of excluded instruments:				0.0238	0.0231				
Test of excluded instruments F(2, 1050)				12.87***	12.41***				
Additional statistics based on Linear Probability Models (available upon request)									
(a) Kleibergen-Paap rk LM statistic $\chi^2(2)$				27.95***	27.07***				
(a) Kleibergen-Paap rk Wald statistic $\chi^2(2)$				26.39***	25.44***				
(b) Kleibergen-Paap Wald rk F statistic				12.87***	12.41***				
(c) Anderson-Rubin Wald test: F(2,1050)				0.36	0.36				
(c) Anderson-Rubin Wald test: $\chi^2(2)$				0.73	0.73				
(c) Stock-Wright LM S-statistic: $\chi^2(2)$				0.73	0.73				
(d) Hansen J statistic $\chi^2(1)$				0.009	0.009				

Notes: The remaining notes in Table 5 hold.

Table 12

Financial Literacy Self-Assessment as an Alternative Measure

	(A) Formal Credit			(B) Informal Credit			(C) Low Spending		
	(1)	*(2)*	*(3)*	*(1)*	*(2)*	*(3)*	*(1)*	*(2)*	*(3)*
Fin. Lit.: Self-Assessment	0.056***	0.047***	1.539***	0.015	0.013	1.103	-0.030*	-0.046***	0.804**
	[0.013]	[0.009]	[0.176]	[0.011]	[0.008]	[0.122]	[0.016]	[0.010]	[0.075]
Year 2009	-	-0.025	0.776*	-	-0.044***	0.661***	-	0.060***	1.227*
		[0.016]	[0.108]		[0.015]	[0.097]		[0.018]	[0.147]
Male	-0.056**	-0.050***	-	-0.012	-0.02	-	-0.034	-0.007	-
	[0.024]	[0.019]		[0.021]	[0.017]		[0.032]	[0.022]	
Single Person Household	0.012	-0.040	-	0.112**	-0.009	-	0.092*	0.068**	-
	[0.047]	[0.033]		[0.049]	[0.027]		[0.054]	[0.031]	
Log(Age)	-0.045	-0.038	-	-0.062*	-0.034	-	0.141**	0.087**	-
	[0.040]	[0.031]		[0.035]	[0.028]		[0.055]	[0.038]	
Has experienced income shock in the last year	0.006	0.022	1.200	0.059**	0.079***	1.719***	0.040	0.061***	1.568***
	[0.026]	[0.017]	[0.226]	[0.024]	[0.015]	[0.356]	[0.034]	[0.019]	[0.264]
No. of Observations	1,033	2,089	500	1,033	2,089	452	1,033	2,089	622
Pseudo R^2	0.101		0.050	0.069		0.050	0.228		0.035
Log-Likelihood	-448.5	-896.7	-164.7	-374.8	-833.0	-148.8	-489.5	-1,024.5	-208.0
Wald χ^2 /LR χ^2 in (3)	100.12***	108.78***	17.25***	61.70***	76.42***	15.73***	258.66***	261.11**	15.11***
LR χ^2 (ϱ=0)		14.20***			11.40***			27.24***	

	(D) Low Spending Level (1-5)			(E) Unspent Income Level			(F) Unspent Income Level (1-5)		
	(1)	*(2)*	*(3)*	*(1)*	*(2)*	*(3)*	*(1)*	*(2)*	*(3)*
Fin. Lit.: Self-Assessment	-0.081**	-0.127***	-0.120***	0.031*	0.087***	1.336***	0.089**	0.230***	0.155***
	[0.040]	[0.017]	[0.025]	[0.018]	[0.011]	[0.112]	[0.037]	[0.029]	[0.043]
Year 2009	-	0.118***	0.083***	-	0.076***	1.596***	-	0.335***	0.382***
		[0.028]	[0.031]		[0.021]	[0.165]		[0.051]	[0.052]
Male	-0.042	-0.017	-	0.038	0.029	-	0.094	0.114*	-
	[0.076]	[0.037]		[0.035]	[0.024]		[0.073]	[0.061]	
Single Person Household	0.204	0.055	-	0.011	0.031	-	0.002	0.092	-
	[0.127]	[0.053]		[0.056]	[0.036]		[0.123]	[0.091]	
Log(Age)	0.301**	0.109*	-	-0.088	-0.04	-	-0.093	-0.057	-
	[0.123]	[0.062]		[0.057]	[0.040]		[0.117]	[0.101]	
Has experienced income shock in the last year	0.014	0.128***	0.135***	-0.007	-0.068***	0.677**	0.006	-0.238***	-0.233***
	[0.076]	[0.032]	[0.044]	[0.035]	[0.022]	[0.106]	[0.074]	[0.056]	[0.074]
No. of Observations	1,004	2,043	2,043	1033	2089	868	1,033	2,089	2,089
Pseudo R^2 (Overall R^2)	0.063	0.299	0.035	0.055		0.078	0.029	0.126	0.085
Log-Likelihood	-1,136.6		-1,273.4	-671.1	-1,292.3	-277.3	-1,517.3		-2,477.5
Wald χ^2 /LR χ^2 in (3)	146.13***	766.77***		73.77***	175.0***		92.61***	287.42***	
F-statistic			11.61***			47.15***			31.24***
LR χ^2 (ϱ=0)					3.21**				

Notes:

Specification (1) is a lagged probit model. Marginal effects and robust standard errors are shown (Coefficients from ordered probit models are shown in Panels D and F). Specification (2) is a random effects probit model. Marginal effects and standard errors are shown (Coefficients from random effects GLS are shown in Panels D and F). Specification (3) is a fixed effects logit model. Odds ratios and standard errors are shown (Coefficients from linear fixed effects models are shown in Panels D and F). All specifications include dummy variables for: Education (4), Occupation (8), Family income quartile (4); Federal region (7).

Appendix A: Construction of the Financial Literacy Index

Panel A: Polychoric Pairwise Correlations Between Financial Literacy Responses

The variables have been transformed to dummies, equal to 1 for correct response equal to 0 for incorrect responses and "Do not know".

	Interest_1	Interest_2	Inflation
Interest_1	1.000		
Interest_2	0.225***	1.000	
Inflation	0.203***	0.295***	1.000
Discounts	0.586***	0.411***	0.378***

Panel B: Polychoric Pairwise Correlations between Financial Literacy Questions, 2008

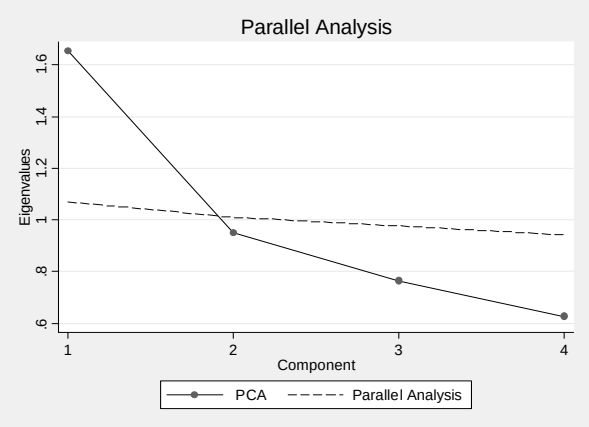
Component	Eigenvalues	Proportion explained	Cum. explained
1	2.117	0.529	0.529
2	0.909	0.227	0.756
3	0.604	0.151	0.908
4	0.370	0.092	1.000

Panel C: Scoring Coefficients for PCA, 2008

Variable	Coeff. 1	Coeff. 2	Coeff. 3
Interest_1	0.455	-0.600	-0.060
Interest_2	0.617	0.620	-0.935
Inflation	0.394	0.469	0.605
Discounts	0.293	-0.139	-0.008

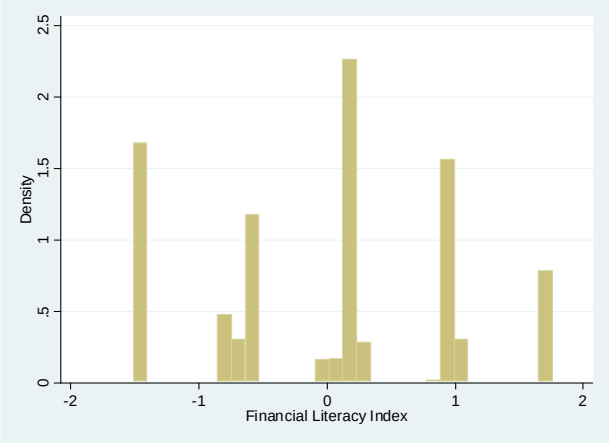
Panel D: Parallel Analysis for the Optimal Number of Factors, 2008

PA based on 10 replications



Panel E: Financial Literacy Index, 2008

First principal component based on 4 financial literacy questions, equally weighted; "Difficulty Answering" is coded as 0.



Pooling Financial Literacy Responses

We deviate from the approach taken by van Rooij, Lusardi, and Alessie (2007), who perform an iterated principal factor analysis of dummies based on the correct and "do not know" responses to each financial literacy question, since (a) binary data do not lend themselves to traditional factor analysis (Shapiro, Lasarev, and McCauley; 2002), and (b) creating multiple binary variables based on a categorical data introduces spurious correlation into the principal factor procedure (Kolenikov and Angeles; 2008).

For robustness, we compute two version of financial literacy index using the Rooij (2007) method: one based on the four dummies used in our approach and another based on two dummies for each question – one each for the correct and "Difficulty Answering Question" responses. Both versions of these indices are highly correlated with our index (*Panel B*).

To test whether two alternatives can be pooled in a multinomial logistic model – Anderson (1984) refers to this as "alternatives being indistinguishable with respect to the independent variables in the model" – we employ a simple likelihood ratio (LR) test for the following hypothesis:

H_0: $\beta_{1,A|B} = \ldots \beta_{K,A|B} = 0$ for alternatives A and B in a model with K parameters (1)

We fit two models: an unrestricted model with test statistic LR^2_F and a restricted model with outcome A as the base category and all coefficients except the intercept for outcome B restricted to 0, with test statistic LR^2_R. The test statistic for combining categories A and B is $LR^2_{A/B} = LR^2_F - LR^2_R \sim \chi^2$ with K degrees of freedom (Long and Freese, 2006 and Claudill, 2000).

Following Lusardi and Mitchell (2007), we classify responses to the financial literacy questions in the survey as either "Correct", "Incorrect", or "Difficulty Answering Question". We test whether the last two alternatives can be pooled and the resulting test statistics (available upon request) indicate that we cannot reject the null hypothesis that "Incorrect" and "Difficulty Answering Question" responses are indistinguishable in our model.

As a second test, we construct for each financial literacy variables an ordered variable = 0 if answered "Difficultly Answering", =1 if answered incorrectly, and =2 if answered correctly. We find no significant differences between logit and ordered logit tests on the determinants of financial literacy responses (results available upon request).

Appendix B: Additional Results

Table B1

Financial Literacy: 1st stage Regressions

	(A) Fin. Lit.: Index		(B) Fin. Lit.: #Correct Responses		(C) Fin. Lit.: Self-Assessment	
Number of newspapers per region	-	0.116**	-	0.141**	-	0.052
		[0.046]		[0.057]		[0.045]
Number of universities per region	-	0.004***	-	0.005***	-	-0.001
		[0.001]		[0.001]		[0.001]
Male	0.041	0.037	0.049	0.043	0.170***	0.170***
	[0.063]	[0.063]	[0.078]	[0.077]	[0.063]	[0.063]
Single Person Household	-0.049	-0.045	-0.060	-0.055	-0.191*	-0.192*
	[0.097]	[0.095]	[0.119]	[0.117]	[0.099]	[0.099]
Log(Age)	-0.136	-0.151	-0.168	-0.187	-0.140	-0.137
	[0.098]	[0.098]	[0.121]	[0.120]	[0.101]	[0.101]
Has experienced income shock	-0.108*	-0.126**	-0.124*	-0.146*	-0.081	-0.090
in the last year	[0.061]	[0.061]	[0.074]	[0.075]	[0.062]	[0.062]
Education (Ref: Primary or Incomplete)						
Secondary	0.112	0.13	0.14	0.161	0.360***	0.357***
	[0.116]	[0.118]	[0.141]	[0.143]	[0.120]	[0.120]
Vocational-Technical	0.294**	0.319***	0.357**	0.387***	0.578***	0.574***
	[0.117]	[0.118]	[0.142]	[0.144]	[0.119]	[0.119]
Higher or incomplete higher	0.486***	0.506***	0.604***	0.627***	0.838***	0.840***
	[0.127]	[0.128]	[0.155]	[0.156]	[0.130]	[0.130]
Occupation (Ref: Unemployed)						
Skilled Non-Manual	0.577*	0.575*	0.724*	0.722*	0.725**	0.716**
	[0.306]	[0.318]	[0.373]	[0.389]	[0.305]	[0.305]
Skilled Manual	0.484	0.504	0.607*	0.631*	0.413	0.4
	[0.294]	[0.307]	[0.358]	[0.374]	[0.288]	[0.288]
Unskilled Non-Manual	0.486	0.482	0.606*	0.601	0.643**	0.634**
	[0.299]	[0.311]	[0.364]	[0.380]	[0.296]	[0.297]
Unskilled Manual	0.528	0.48	0.662	0.604	0.522	0.5
	[0.332]	[0.343]	[0.404]	[0.419]	[0.344]	[0.346]
Entrepreneur	0.655*	0.679*	0.838**	0.867**	0.806**	0.792**
	[0.337]	[0.348]	[0.412]	[0.425]	[0.315]	[0.315]
Pensioner	0.177	0.157	0.236	0.211	0.465	0.451
	[0.304]	[0.317]	[0.370]	[0.387]	[0.303]	[0.304]
Other	0.486*	0.477	0.620*	0.61	0.435	0.427
	[0.295]	[0.308]	[0.359]	[0.375]	[0.292]	[0.293]
Family Income (Ref: - 1st - (lowest))						
- 2nd -	0.094	0.081	0.110	0.095	0.068	0.064
	[0.089]	[0.089]	[0.109]	[0.109]	[0.090]	[0.090]
- 3rd -	0.069	0.023	0.087	0.032	0.169*	0.166*
	[0.090]	[0.090]	[0.110]	[0.110]	[0.092]	[0.092]
- 4th - (highest)	0.231**	0.144	0.280**	0.174	0.148	0.150
	[0.109]	[0.109]	[0.135]	[0.135]	[0.102]	[0.104]
Federal Region (Ref: Central)						
North Western	0.131	1.316***	0.125	1.558**	0.281**	0.833*
	[0.094]	[0.491]	[0.115]	[0.604]	[0.111]	[0.488]
Southern	0.059	0.038	0.056	0.029	0.177*	0.164*
	[0.099]	[0.099]	[0.121]	[0.121]	[0.097]	[0.099]

Table B1 continued in next page

Table B1 continued from last page

Volga	0.220**	0.355***	0.269**	0.433***	0.235***	0.267***
	[0.090]	[0.096]	[0.110]	[0.118]	[0.081]	[0.087]
Urals	0.294*	2.003***	0.386**	2.453***	0.213**	0.937
	[0.150]	[0.665]	[0.183]	[0.819]	[0.099]	[0.645]
Siberian	0.002	0.854**	0.003	1.032**	0.388***	0.749**
	[0.114]	[0.359]	[0.141]	[0.443]	[0.107]	[0.317]
Far Eastern	0.289**	1.454***	0.345**	1.752***	0.515***	0.999**
	[0.139]	[0.460]	[0.171]	[0.567]	[0.135]	[0.451]
Constant	-0.388	-7.348***	1.366**	-7.048**	1.566***	-1.475
	[0.483]	[2.762]	[0.592]	[3.403]	[0.490]	[2.677]
IV: Test of joint significance:	-	12.87***	-	12.41**	-	0.93
IV: Test of omitted variables	31.45***	-	30.54***	-	2.01	-
No. of Observations	1,074	1,074	1,074	1,074	1,033	1,033
R^2	0.124	0.145	0.125	0.145	0.156	0.158
Log-Likelihood	-1,433.6	-1,420.7	-1,651.9	-1,639.4	-1,349.3	-1,348.3
F-statistic	7.40***	8.09***	7.46***	8.02***	9.62***	9.15***

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

Table B2
Pairwise Correlation Matrix

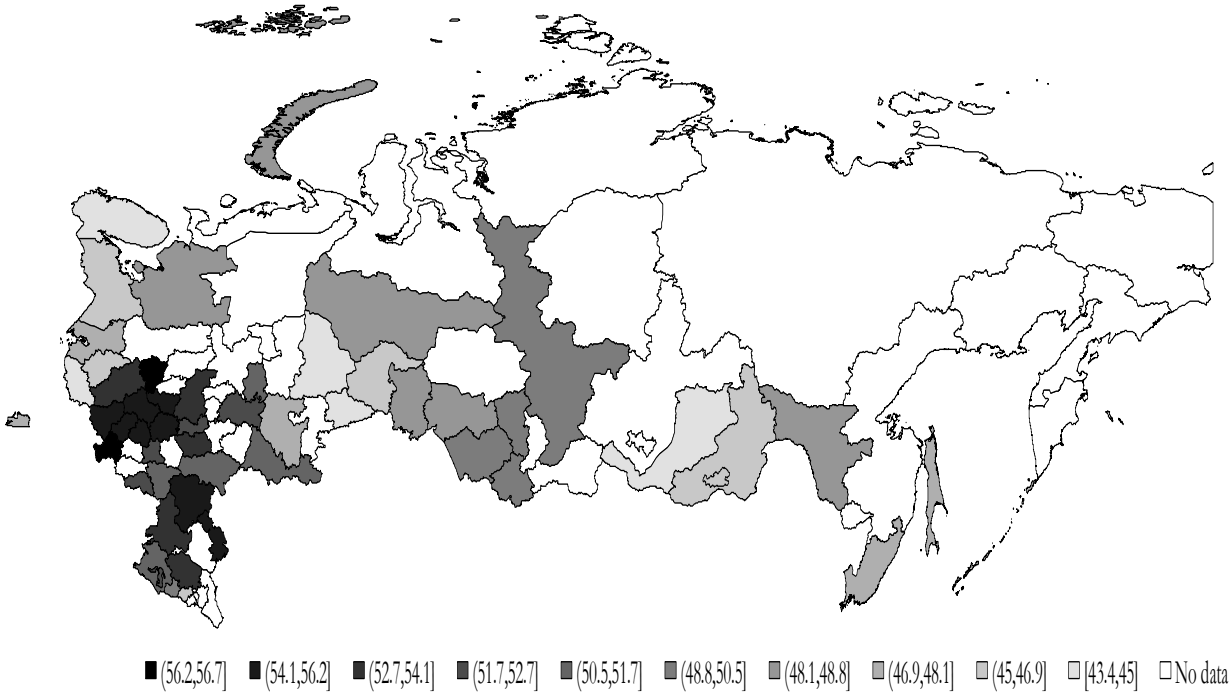
	Outcome variables							***Instrumental variables***			***Financial Literacy***			***Indiv. Charact.***		
	Bank Account	Formal Credit	Informal Credit	Low Spending	Unspent Income	Level of Low Spending	Level of Unspent Income	# Newspapers	# Universities	# Bank branches	Index	#Correct Responses	Self--Assessment	Family Income	Income shock	Urban region
Outcome variables																
Bank Account	1.00															
Formal Credit	0.05*	1.00														
Informal Credit	-0.01	-0.19*	1.00													
Low Spending	-0.05*	-0.02	0.07*	1.00												
Unspent Income	0.12*	0.00	-0.06*	-0.26*	1.00											
Low Spending Index	-0.08*	-0.02	0.06*	0.84*	-0.31*	1.00										
Unspent Income Index	0.16*	-0.03	-0.08*	-0.28*	0.85*	-0.34*	1.00									
Instrumental variables																
# Newspapers	-0.03	-0.06*	0.04*	0.02	-0.01	0.02	-0.04	1.00								
# Universities	0.00	-0.05*	-0.04	-0.07*	0.01	-0.10*	0.01	0.15*	1.00							
# Bank branches	0.02	-0.02	-0.03	-0.17*	0.03	-0.20*	0.02	0.10*	0.51*	1.00						
Financial Literacy																
Index	0.09*	0.10*	-0.02	-0.20*	0.15*	-0.25*	0.16*	0.34*	0.12*	0.04*	1.00					
#Correct Responses	0.09*	0.10*	-0.03	-0.20*	0.16*	-0.25*	0.16*	0.34*	0.12*	0.04	0.99*	1.00				
Self-Assessment	0.11*	0.14*	0.01	-0.20*	0.22*	-0.27*	0.24*	0.16*	0.01	0.00	0.37*	0.36*	1.00			
Individual Characteristics																
Family Income	0.09*	0.03	-0.04*	-0.34*	0.19*	-0.44*	0.19*	0.15*	0.19*	-0.01	0.23*	0.23*	0.23*	1.00		
Income shock in last year	0.01	0.03	0.13*	0.06*	-0.07*	0.09*	-0.09*	0.01	-0.04*	0.02	0.02	0.03	0.02	-0.05*	1.00	
Male	0.00	0.00	-0.02	-0.07*	0.04*	-0.07*	0.05*	0.02	0.00	-0.02	0.05*	0.05*	0.07*	0.08*	0.01	-0.01
Single Person Household	0.00	-0.07*	-0.02	0.19*	-0.02	0.17*	-0.02	-0.11*	0.01	0.01	-0.13*	-0.13*	-0.13*	-0.17*	-0.05*	0.02
Age	0.04	-0.15*	-0.06*	0.27*	-0.09*	0.28*	-0.09*	-0.18*	0.00	-0.05*	-0.27*	-0.27*	-0.25*	-0.31*	-0.10*	-0.05*
Education																
Primary or Incomplete	-0.08*	-0.07*	-0.02	0.12*	-0.03	0.14*	-0.04*	-0.13*	0.00	-0.01	-0.18*	-0.18*	-0.24*	-0.18*	-0.04	-0.11*
Secondary	-0.05*	0.02	0.05*	0.05*	-0.04*	0.09*	-0.04*	-0.06*	-0.03	-0.04	-0.07*	-0.07*	-0.08*	-0.08*	0.03	-0.08*
Vocational-Technical	0.02	-0.01	0.03	-0.02	-0.01	-0.02	-0.01	0.04*	-0.04*	0.01	0.03	0.03	0.04*	0.03	0.00	0.04

Higher or incomplete higher	0.07*	0.04	-0.07*	-0.12*	0.08*	-0.16*	0.09*	0.10*	0.08*	0.04*	0.16*	0.16*	0.19*	0.16*	-0.02	0.12*
Occupation																
Skilled Non-Manual	0.03	0.01	0.00	-0.06*	0.06*	-0.09*	0.05*	0.07*	0.03	-0.03	0.10*	0.10*	0.13*	0.12*	-0.02	0.00
Skilled Manual	-0.01	0.12*	-0.02	-0.12*	0.01	-0.11*	0.01	0.03	-0.07*	0.05*	0.09*	0.08*	0.04	0.11*	0.03	0.06*
Unskilled Non-Manual	0.06*	0.06*	0.00	-0.06*	0.03	-0.06*	0.05*	0.02	0.02	0.04*	0.06*	0.06*	0.08*	0.05*	0.02	0.07*
Unskilled Manual	-0.05*	0.00	0.02	0.05*	-0.03	0.06*	-0.04*	0.02	0.00	0.00	0.00	0.00	0.01	-0.05*	0.04	-0.08*
Entrepreneur	0.02	0.04*	0.00	-0.02	0.02	-0.05*	0.03	0.05*	-0.01	-0.05*	0.02	0.02	0.03	0.05*	-0.01	0.00
Unemployed	0.03	0.00	0.02	0.00	0.01	0.03	0.00	0.00	0.02	-0.06*	-0.01	-0.01	-0.03	0.00	0.03	-0.01
Pensioner	-0.01	-0.18*	-0.04*	0.26*	-0.08*	0.27*	-0.09*	-0.18*	0.00	-0.08*	-0.28*	-0.27*	-0.24*	-0.32*	-0.10*	-0.10*
Other	-0.05*	-0.02	0.06*	-0.07*	0.00	-0.06*	0.00	0.04*	0.03	0.05*	0.07*	0.07*	0.03	0.09*	0.05*	0.01
Federal Regions																
Urban	0.05*	-0.03	-0.04*	-0.13*	0.03	-0.17*	0.01	0.08*	0.28*	0.34*	0.11*	0.11*	0.08*	0.24*	-0.01	1.00*
Central	0.09*	-0.07*	-0.04	-0.11*	0.08*	-0.12*	0.07*	0.19*	0.17*	-0.28*	0.04*	0.04*	0.01	0.29*	-0.02	0.08*
North Western	0.01	0.00	-0.04*	0.00	0.05*	-0.01	0.08*	-0.21*	0.11*	0.09*	0.00	0.00	0.01	0.04*	-0.03	0.05*
Southern	-0.04*	-0.02	0.03	0.04	-0.02	0.07*	-0.05*	0.09*	0.01	0.10*	-0.05*	-0.05*	-0.01	-0.13*	0.03	-0.07*
Volga	-0.10*	0.02	0.04*	0.11*	-0.06*	0.10*	-0.07*	0.08*	-0.15*	0.15*	0.00	0.00	-0.06*	-0.20*	0.03	-0.01
Urals	0.02	0.00	-0.02	-0.02	0.00	-0.02	0.01	-0.18*	-0.07*	0.22*	0.01	0.01	-0.01	0.02	0.00	0.01
Siberian	0.00	0.05*	0.00	-0.02	-0.07*	-0.02	-0.05*	-0.07*	-0.06*	-0.11*	0.01	0.01	0.04	-0.05*	-0.05*	0.01
Far-Eastern	0.02	0.07*	0.01	0.00	0.02	0.00	0.01	-0.12*	-0.06*	-0.22*	-0.04*	-0.04	0.03	0.00	0.04*	-0.11*

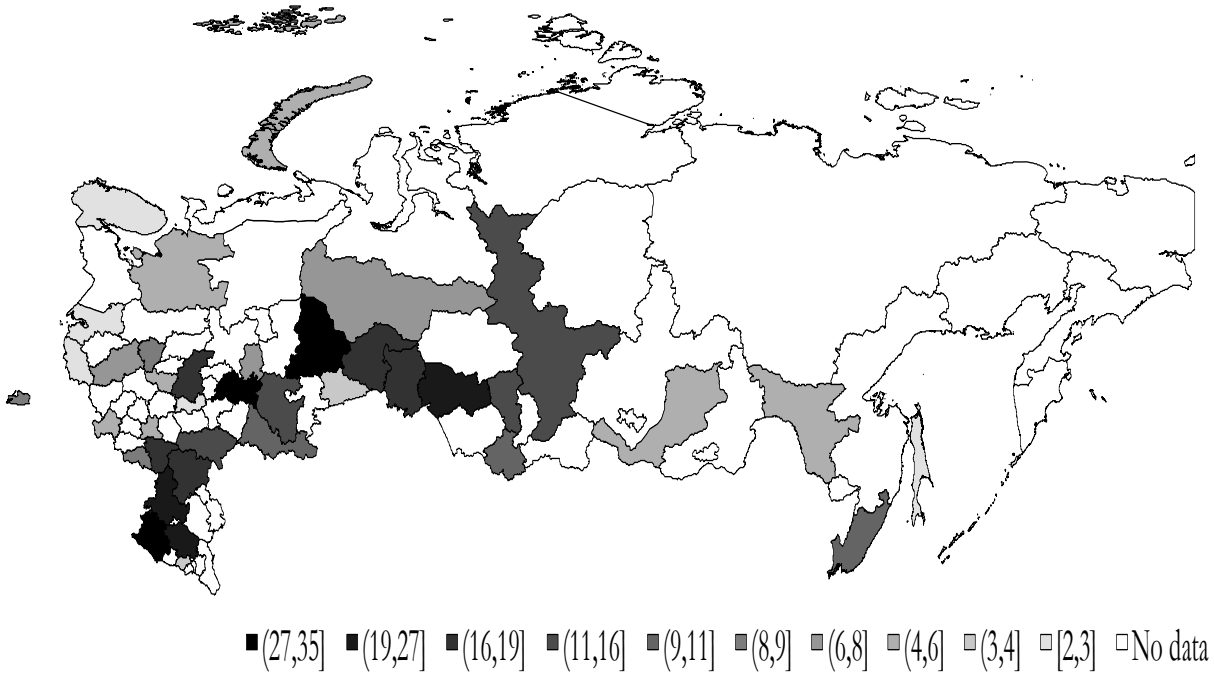
Notes:
*: $p<0.05$

Appendix C: Instrumental Variables (2007)

Panel A: Number of newspapers by federal region (darker → higher)



Panel B: Number of Universities



Source: The data sources are: Bank branches and Number of Universities: Central Bank of Russia (2007); Number of newspapers: East View Information Services (2008), http://www.eastview.com/Online/DBtitlelists.aspx. The map coordinates for the Russian administrative regions, along with map platforms are available at: http://www.diva-gis.org/gData.