



EFFECTIVENESS OF FINANCIAL LITERACY
PROGRAM AT SCHOOLS. THE CASE
STUDY OF SCHOOLBANK IN GEORGIA

ISET

Abstract

This paper estimates the determinants of financial literacy for school children and also evaluate the effectiveness of the SchoolBank project. SchoolBank is a standard educational module developed by National Bank of Georgia (NBG) in collaboration with Child and Youth Finance International (CYFI). The empirical results show that neither gender and grade nor the geographical location of the school and the source of income do not significantly affect the initial level of financial literacy of selected school children. But a positive interdependence between having a bank deposit and financial literacy is captured. Another contribution of the paper is to evaluate the effectiveness of the SchoolBank project. The study shows the overall improvement of financial literacy among selected school children. Furthermore, we observe that such an improvement of financial literacy is mostly driven by a significant increase of financial knowledge and attitudes, while the effect on financial behavior is very limited.

1. Introduction¹

People face complicated financial decisions starting from a young age. Financial mistakes made early in life can be costly. Thus, Financial literacy could play an important role in sound financial decision-making. Financial illiteracy has implications for many household behaviors. People with the lack of financial literacy participate less in the stock market (van Rooij et al. 2011), choose mutual funds with higher fees (Hastings and Tejada-Ashton, 2008), and accumulate less retirement wealth (Behrman et al. 2010). There is also evidence that the less literate people are more likely to have costly mortgages (Moore, 2003) and more likely to engage in high-cost borrowing.

Understanding financial literacy among young people is thus of critical importance for policymakers in several areas; it can be beneficial for those who are working on financial education programs as well as those set the rules to protect younger consumers. The National Bank of Georgia (NBG), with the involvement of different stakeholders from public entities, private financial sector and civil society, and with the support from the Savings Banks Foundation for International Cooperation (SBFIC), developed and approved the National Strategy for Financial Education in 2016. The mission of the strategy is to develop guiding principles and strategic directions for enhancing financial literacy level in Georgia. According to the strategy of the following target groups are highlighted: pupils and students, unemployed population, people employed in large companies, rural population, people in front of special life events, such as going to college, buying a home, getting married and etc. Thus, different methods and tools, like formal financial education courses for school children, on the job training for employed people, are used to deliver financial literacy to the mentioned target groups.

This paper is mostly concentrated on the importance of the financial literacy for school children. As it is emphasized in national strategy, the foundation of financial education should be built in young ages. At an early age it is easier to develop the habit of personal finance management and turn it into a culture. In the long run, by investing in the youth's financial education, it is possible for the youth to form right attitudes and skills, which they will need to make better financial decisions. The positive effect of financial literacy program at Japanese school is summarized by Sekita (2011). He finds that if people save regularly when they are children, they are more likely to develop a plan for retirement when they become adults.

In this paper, we estimate the determinants of financial literacy for school children and also evaluate the effectiveness of the SchoolBank project. SchoolBank is a standard educational module developed by National Bank of Georgia (NBG) in collaboration with Child and Youth Finance International (CYFI). The educational module contains about 60 minutes classes on 15 different topics related to personal finance, banking products, consumer rights and responsibilities. The project was piloted in 11 schools in Georgia. Participants are asked to fill out the pre and post questionnaire which check all three components of financial literacy: knowledge, attitudes and behavior. The data from this questionnaire is used in the main analysis.

The empirical results show that neither gender and grade nor geographical location of school and the source of income do not significantly affect the initial level of financial literacy of selected school children. But a positive interdependence between having a bank deposit and financial literacy is captured. Due to the lack of the data available we can't conclude causal relationship that having a bank deposit causes higher financial literacy among school children. There might exist some external factors which determines both children's financial literacy and having a bank deposit. If we take into account the current legislation regarding opening a savings account for children under 18 years old, parent's approval and presence is needed. Thus, parents' financial literacy might play an important role in children financial literacy and the decision to open a savings deposit at

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the same time. As the primary providers of economic socialization, parents teaching young people the importance of saving and helping them to open savings accounts (Kim et. al, 2011; Mandell, 2010; Shanks et. al, 2010). On the other hand, young people's saving behaviors is not only affected by individual characteristics but institutional factors play a role as well. By offering different financial products banking institutions can further facilitate asset-building and shape economic behavior.

Another contribution of the paper is to evaluate the effectiveness of the SchoolBank project. The study shows the overall improvement of financial literacy among selected school children. Furthermore, we observe that such improvement of financial literacy is mostly driven by a significant increase of financial knowledge and attitudes, while the effect on financial behavior being very limited.

The paper proceeds as follows. Section 2 review the existing literature. Section 3 describes the data and outlines the empirical model. Section 4 then reports the estimation results, after which section 5 discuss the main findings and concludes the paper.

2. Literature review

Financial education programs are likely to be more effective when targeted to specific groups of the population. National surveys show that young adults have amongst the lowest levels of financial literacy². As a result, they are not confident to choose the right financial products and often have a lack of interest in sound financial planning. In 2015, the OECD recommended to start financial education program as early as possible in schools, including financial education as part of the school curriculum. While, little causal evidence exists on the effectiveness of financial education programs in schools.

After exploring the effectiveness of financial literacy programs in certain Wisconsin schools, Batty et al. (2015) find that financial education for grades three to five increase children financial knowledge not only in the short term but also one year later, affecting the saving probability. Using the control field experiment, Kalwij et al. (2017) estimate the short-term effects of a 45-minute financial education program on financial literacy and savings behavior in Dutch primary school. The research shows not only a significant improvement in financial literacy but also improvement in savings probability for six graders.

Together with the formal financial education teaching programs, experienced based learning also acquiring the growing interest. In more recent studies the early access to formal saving accounts for school children is highlighted. Kotlikoff and Bernheim (2001) find that people who had an allowance, bank account, when they were children saved more and accumulate more wealth. Similarly, Zhan et al., (2006) reaches the conclusion that participants of a financial management training program scored higher if they had a bank account. The connection between financial literacy and financial capability is summarized by Johnson and Sherraden (2007). They suggest that difference between young people in terms of access to formal financial products may affect their ability to absorb the knowledge and skills in financial education classes. In addition, they conclude that when young people get financial education, this might not have a significant effect on financial well-being unless they have an access to financial institutions and services. Thus, gains in human capital may do little to increase financial capabilities in the absence of access to mainstream financial institutions.

Existing literature offers two explanations for how young people can have the access to savings accounts: individual level explanations, including economic socialization (e.i parents' financial literacy) and institutional level explanations, like regulatory policy of national banks, commercial banks etc.

² Financial Education in Schools, OECD/International Network on Financial Education (INFE)

Economic socialization mostly focuses on the role of the family in teaching children about money and personal finance (Furnhain, 1996). The role of parent in this process is vital. Parents help children in opening savings accounts and teach them the importance of saving (Kim et. al, 2011). From this viewpoint children's economic socialization is mostly affected by parents' individual decision-making.

According to Sherraden (1991) access to institutions can also encourage economic socialization and lead to better economic outcomes. Using several tools, like policies, products and services, institutions can intentionally design the shape of economic behavior (Beverly et al., 2008). An individual with access to formal saving product is more likely to save more compared to those who do not have such access (Sherraden and McBride, 2010). Unfortunately, banking institutions are not necessarily interested in broadening access to young people. This might be explained by neoclassical theory that young people are less likely to accumulate a wealth and save money in contrast they are accumulating debt because of lower income and higher consumption.

"Consider the following scenario: a young person makes regular trips to the bank with her parents to deposit birthday and holiday money into her own savings account. By the time she reaches high school around ages 13–17, she may be saving for long-term expenses like a car. She continues saving during her transition to adulthood around ages 18–22. Since she has been saving for a long time, her saving strategies have grown sophisticated and her economic well-being is secure. She may be paying for college, saving toward her first home, investing in stocks, and making automatic deposits from her paycheck into savings."

Friedline et. al (2012)

If the policy aims to increase the financial literacy among school children, the role of parent's literacy should be taken into account. We might also emphasize the role of institutions which further encourage school children to transfer their theoretical financial knowledge to practical financial skills by using formal financial products.

3. Data and Model

3.1 Data

SchoolBank is a project developed by Child and Youth Finance International (CYFI) and implemented by National Bank of Georgia in collaboration with the Ministry of Education and Science. The project aims economically empowerment of children and youth by providing them with access to appropriate banking products and economic citizenship education.

SchoolBank was piloted in 11 public schools in Tbilisi, Rustavi and Mtskheta for 3 months, starting last October and running until December 2017. The schools were selected by self-interest principle. The information about School Bank Project was distributed among all schools by the Ministry of Education and Science of Georgia. The schools which expressed their interest to be involved in the project were selected. The piloted SchoolBank project was mostly concentrated on a teaching component. The teaching module contains 15 topics related to personal finance, consumer rights and responsibilities, and topics related to the banking sector in general.

Self-selected sample could be the one of the limitation of the study. It is difficult to observe the real reasons why children enroll to this course or not. Taken into account the fact that SchoolBank is the first ever formal financial education course at school, the level of financial literacy among all school children is more or less the same. Based on the interviews with school teachers, children chose to participate in SchoolBank project because it is new and innovative, no systemized selection bias is observed from the data. But, the sample still does not give the opportunity to generalize the results of the study.

To evaluate the effectiveness of SchoolBank project the data from pre and post questionnaire is used. The regional distribution of the sample shows that the largest share comes to Tbilisi (47%-pre-test), followed by

Rustavi, Ksani and Mtskheta (Table 1, annex). In case of pre-test the share of girls is 52% while the share of boys is 48%. It should be noticed as well that the share of girls in the post-test is even higher and amounts to 62% (Table 2, annex). This means that girls are more interested in SchoolBank project and proportionally more girls completed the whole course.

The SchoolBank project was piloted in 7,8 and 9 grades students. The distribution of pre-test observations by grades shows that 7th and 8th grade students are more interested in SchoolBank project than 9th grade students. Only 3 students of 9th grade participated in the project. Course completion rate for 7th grade equals 61%, while the same indicator for 8th grade is even high – 76% (Table 3, annex).

The standard methodology to measure the level of financial literacy is to count the number of correct answers to the financial literacy questions (Hung et al. (2009), Kalwij et al. (2017)). Similarly, in our case, financial literacy is calculated as the number of correct answers to six of the financial literacy questions.

Q1. **Attitude:** I think that saving is useful;

Q2. **Behavior:** I regularly save money in a safe place;

Q3. **Behavior:** I always plan how to spend money;

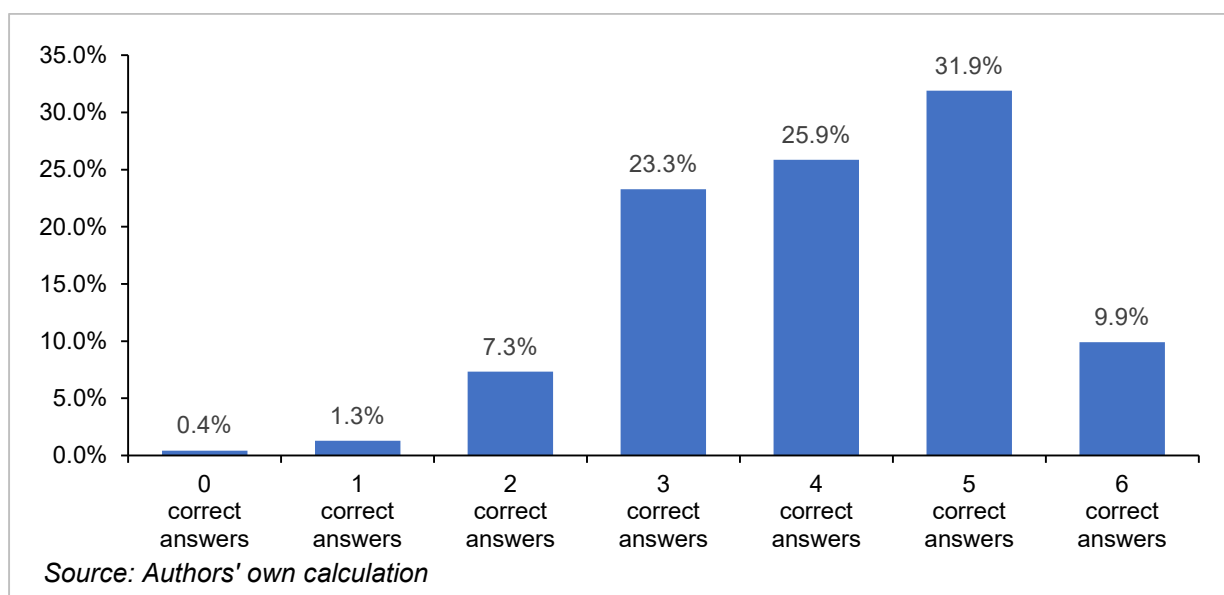
Q4. **Knowledge:** I know what the main financial terms, deposits and payment cards mean

Q5. **Knowledge:** Suppose, 10 children are given 250 Gel and 50 cents. If this money should be distributed equally, how much money each of the child will get.

Q6. **Knowledge:** Suppose, you make a 100 GEL deposit and the annual interest rate on deposit is 2%. How much money will you accumulate after 5th year?

Q1-Q4 are Likert scale questions (a scale used to represent people's attitudes to a topic), starting from “Strongly disagree” to “Strongly agree”. Answers, like “Agree” and “Strongly agree” treated as correct, while “Strongly disagree”, “Disagree” and “Neutral” are treated as incorrect. Q1-Q6 covers all three components of the financial literacy, such as financial attitudes, financial behavior and financial knowledge.

Graph #1. The distribution of correct answers for the pre-test (number of respondents - 232)



The distribution of financial literacy based on the pre-test results shows that the most of the students answers the majority of questions correctly. The distribution is left skewed and there are only 1 student who answered all questions incorrectly. On average, 68% of questions are answered correctly, which is 4 questions out of 6 questions.

3.2 Model

Model (1) is estimated using only pre-test responses ($t = 0$) and identifies how financial literacy is associated with background characteristics, including gender, age, location of school³, income source of the student⁴ and having a bank deposit.

$$Y_{i0} = \alpha_0 + X_{i0}^T \alpha + \varepsilon_{i0} \quad i \in \{1, \dots, n\} \quad (1)$$

Where Y_{i0} is the share of correct responses to Q1-Q6 questions in pre-test, X_{it} is a set of explanatory variables, ε_{i0} is an error term and α is a parameter vector to estimate.

On the other hand, to evaluate the effectiveness of SchoolBank project, we use simple mean comparison analysis⁵. The main focus is on how financial literacy differs before and after SchoolBank project in overall and in some sub-groups as well, like by gender, by grade, by location and by having a bank deposit.

Based on the models above, the following hypothesis are tested:

Hypothesis 1: Having an access to formal financial products are associated with higher financial literacy among school children;

Hypothesis 2: Financial literacy after SchoolBank project is higher compared to the pre-treatment level.

4. Empirical results

4.1 Determinants of financial literacy

We start estimating the base model (1) which includes students background characteristics like gender, grade, school location and having a bank deposit. We observe significant positive interdependence between having a bank deposit and financial literacy level. Due to the lack of data available, we can't conclude that there is a causal relationship between having a bank account and higher financial literacy. But on the other hand, students with bank deposits are more likely to be more financial literate than those without a deposit. This result can be driven by some external factors which determine both children's financial literacy and having a bank account at the same time. As we mentioned above, existing literature (Mandel, 2010; Kim et. al, 2011) mostly emphasize the role of parents in this process. Parents can contribute to children's financial literacy through two channels. First channel is the direct and capture the direct knowledge transfers from parents to children. The second channel is through children's early access to formal financial products, like deposits. At the age of 13-14, the financial decisions such as opening deposit account are not made by children alone but they need the parents' permission. So, having a bank deposit means that parents decide to save the money for their children. Thus, this decision could mostly be driven by parents' financial literacy not the children

³ It is a dummy variable =1 if school locates in Tbilisi and =0 otherwise.

⁴ It is dummy variable =1 if children have money from other sources, such as gifts, stipends/grants and part-time job salary and =0 if school children have pocket money from home,

⁵ We observe the pre and post test results but we can't match these two tests. Thus, we can't use Difference in Difference (DIF-DIF) technique.

financial literacy per se. But when children already have a bank deposit they can get the benefits in terms of knowledge what they gain when visit to banks, add money to deposits, calculate the interest income, getting familiar with the time value of money and etc.

Table 1. Estimation results of the model

	(1)	(2)	(3)
Male	-0.015 (0.027)	-0.009 (0.027)	-0.024 (0.029)
8 th grade	0.018 (0.030)	0.010 (0.031)	0.023 (0.031)
9 th grade	0.034 (0.080)	0.027 (0.082)	-0.051 (0.099)
Capital City	0.068** (0.030)	0.054* (0.032)	-0.081 (0.071)
Bank Deposit	0.080* (0.040)	0.081* (0.042)	0.085* (0.044)
Income Source		0.029 (0.034)	0.031 (0.037)
Constant	0.638*** (0.029)	0.643*** (0.029)	0.726*** (0.065)
School Fixed Effect	No	No	Yes
Observations	229	225	225
R-squared	0.040	0.037	0.070

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

After controlling the source of income and the school fixed effect (3), the effect of bank deposit on financial literacy is still significant and positive. Having a bank deposit is associated with 8.5% higher financial literacy level.

Contrary to the growing literature about the gender gap in financial literacy (Chen and Vople (2002), Grohmann (2016)), we observe that gender does not play a significant role in explaining initial financial literacy among selected school children. This might be explained by several factors but the sample selection should be kept in mind. As mentioned above SchoolBank was piloted at schools not as a mandatory but as an elective course. This means that students with more or less similar interests and initial financial literacy levels were selected. For instance, in the pre-test both girls and boys answered 68% of financial literacy questions correctly.

Similar to gender, grade has no significant effect on financial literacy. The sample includes the students from 7th, 8th and 9th grades. Out of 232 students the majority of students are either 7th or 8th grade and only 3 students are from 9th grade. If we take into account the fact that SchoolBank was the first financial education course at schools, no other course related to financial issues were not taught for these children before, the initial financial literacy level for 7th and 8th grade students should be very similar. The data supports this argument as well, in the pre-test 7th grade students answer 69% of questions correctly and this number for 8th grade students is 67%.

Capital city effect is not significant in the main model as well. This might be explained by the fact that the majority of non-capital city students are from Rustavi which is the third largest city in Georgia. So, there is no significant difference between Tbilisi and Rustavi in terms of children's general knowledge and access to

financial services. The results also show that students' financial literacy is independent from the source of income. Whether students get money from parents, or they get scholarship, grants, gifts or salary, their financial literacy do not differ much.

Thus, demographics and geography do not play a significant role when we analyzing the level of financial literacy. Results from the main models shows that actual usage of financial products, such as having a bank deposit is positively correlated with children's financial literacy. We can't conclude the causal relationship but the role of the parents financial literacy should be highlighted.

4.2 Evaluation of SchoolBank project

The data does not give the opportunity to use parametric or semi-parametric models, instead we focus on mean comparisons to evaluate the effectiveness of SchoolBank project. It should also be kept in mind that the number of responses for pre- and post-tests are not the same. This means that 232 students started SchoolBank classes but only 161 finished it. The exact reasons for the drop-outs are not known, but it might affect the interpretation of the results if the drop-out from the course was not random.

As we mentioned above, we measured financial literacy before and after SchoolBank project for different sub-groups. On average, the level of financial literacy increased significantly, meaning that after the SchoolBank project, students answered 77% of financial literacy questions correctly, while the same indicator was 68% before the SchoolBank project.

Table 2. Financial literacy by three main components

	Attitude	Behavior	Knowledge
Pre	83.6%	66.1%	64.1%
Post	90.1%	63.7%	81.1%
Difference	6.5%*	-2.4%	17%***

Source: authors' own calculation

The study shows that such improvement of financial literacy is mostly driven by a significant increase of financial knowledge and attitudes, with the effect on financial behavior (answers to the following questions: I regularly save money in a safe place and I always plan how to spend money) being very limited (Table 2). These results are consistent with existing studies (Batty et al. (2015), Kalwij et al. (2017)) which conclude that in the short term, financial education programs contribute to financial knowledge and attitude, but need time to transmit financial skills to financial behavior.

Table 3. Pre and Post Financial Literacy level by different sub-group

	Average	Boys	Girls	Capital city	Other cities	7 th grade	8 th grade	Has deposits	Does not have deposits	Number Of observations
Pre	68%	68%	68%	71%	65%	69%	67%	76%	67%	232
Post	77%	77%	76%	84%	71%	80%	74%	77%	77%	161
Difference	9%***	9%***	8%***	13%***	6%**	11%***	7%**	1%	10%***	

Source: authors' own calculation

Boys and girls recorded very similar financial literacy levels before and after SchoolBank project. SchoolBank is not a mandatory course, and only children who are interested in the topic are enrolled. This means that, more or less, children with similar interests and similar initial financial literacy levels are selected. We observe a statistically significant improvement of financial literacy in both groups. Before SchoolBank, both girls and boys answered 68% of questions correctly but afterwards the share of correctly answered questioned increased to 77%.

It is worth noting that before the SchoolBank project, the difference in financial literacy levels between Tbilisi's schools and schools from other cities, such as Rustavi, Mtskheta and Ksani, was six percentage points. After the course, we observe a significant improvement in financial literacy in both sub-groups. Interestingly, on average, students from Tbilisi schools improved their financial literacy level (by 13 percentage points) more than the students outside Tbilisi (by 6 percentage points). Thus, the gap in financial literacy between Tbilisi schools and the schools outside Tbilisi increased significantly. The exact reasons behind this disparity can't be observed from the data, but further investigation is needed as to why the project was less effective outside Tbilisi – was it due to students, teachers, or other administrative or technical issues?

Due to the fact that SchoolBank was the first official financial literacy course taught at schools, we observe that the initial financial literacy for 7th and 8th grade students are very similar, in the 67-69% range. After the SchoolBank project, improvement in financial skills is observed to occur at a higher (by 11 percentage points) for 7th grade students than for 8th grade students (by 7 percentage points).

It is noteworthy that students who have a bank account, on average, answered 76% of financial literacy questions correctly in the pre-test, while the same indicator is only 67% for students who do not have a bank account. After the SchoolBank project, we observe almost no change in financial literacy level for account-holder students, but the improvement in financial literacy for students without a bank account is significant. Therefore, after SchoolBank, we observe a convergence of financial literacy levels between these two groups.

So, the result that having a bank deposit is positively associated with financial literacy does not give the chance to discuss about the causal relationship. Reverse causality and the omitted variable bias can be treated as main limitations of the model.

5. Concluding Remarks and Recommendations

Financial literacy plays an important role in household behavior. People with low literacy are less likely to participate in stock market, plan for retirement, and, as a result, accumulate much less wealth. Thus, the promotion of financial education by government organizations, media, non-government organizations, commercial banks and other institutions are crucial in this process. According to the best practice financial education programs are likely to be more effective when targeted to specific groups of the population, such as school children.

The paper estimates the determinants of financial literacy for school children and also evaluates the effectiveness of SchoolBank project piloted in 11 schools in Georgia. The results from the main model show that neither gender not grade, capital city and income source is significantly correlated with the initial financial literacy of selected school children. What we observe is the significant positive correlation between having a bank deposit and initial financial literacy. It is not a causal relationship but some arguments still exist how early access to formal financial products can further enhance children's financial literacy. when children have a bank deposit they might get more practical financial skills when visit to banks, add money to deposits, calculate the interest income and etc. But on the other hand, parents' role in children's financial literacy is essential and needs further investigation.

In terms of effectiveness of SchoolBank project, the study shows that after SchoolBank the average financial literacy level among selected school children increased, but the following recommendation should be taken into account:

- The overall completion rate of SchoolBank project is about 70%, meaning that only 70% of school children completed the course. There might be several reasons why 30% of drop-out rate is observed. Whether this drop out is related to the content of the course or other administrative issues, for the next scale up SchoolBank project it needs to be taken into account. Such a high attrition rate might affect the interpretation of results as well.
- The study shows that SchoolBank is more effective in Tbilisi schools rather than schools outside Tbilisi. Students from Tbilisi school improve their financial literacy more than other students. Further investigation is needed as to why the project was less effective outside Tbilisi – was it due to students, teachers, or other administrative or technical issues?
- Having a bank deposit is positively associated children financial literacy level. However, it is not a causal relationship, but some action-provoking results still can be relevant. First, the most important aspect is the parent's role in children financial literacy. Parents can either transmit their financial skills to their children or give them the early access to formal financial products. On the other hand, Japan has an interesting experience in cooperation between commercial banks and schools. Children's banks in Japan allow students to deposit and withdraw money to/from financial institutions through schools. Such experience-based learning encourages students to save money regularly and this would lead to development of strong saving habits in the future.
- Piloted SchoolBank project was mostly concentrated on educational module but banking component of the project should be developed as well. Banking component includes the direct communication between school children and banks' representatives. Workshops and study tours to banks are also the part of the module. Banks participation in the process further enhance not only theoretical but practical financial skills of the school children as well.
- We discussed about the parents' role in children financial literacy. It will be fruitful that children have either projects or homework to be done with parents or other members of the household. This will enhance the communication between parents and children in financial topics.

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Annex

Table 1. Geographical Distribution of Students by Questionnaire Type

	Pre	Post
Tbilisi	110	74
Rustavi	94	66
Ksani	15	8
Mtskheta	13	13
Total	232	161

Table 2. Gender Distribution of Students by Questionnaire Type

	Pre	Post
Boy	110	61
Girl	122	100
Total	232	161

Table 3. Distribution of Students by Grade and Questionnaire Type

	Pre	Post
7 th grade	124	76
8 th grade	105	80
9 th grade	3	3
N/A	-	2
Total	232	161

Table 4. Robustness checks, excluded some sub-groups

	Ksani Public School is excluded	Eredi Public School is excluded	9 th grade students are excluded
Male	-0.016 (0.029)	-0.032 (0.030)	-0.021 (0.030)
8 th grade	0.019 (0.031)	0.022 (0.032)	0.022 (0.031)
9 th grade	-0.053 (0.100)		
Capital City	-0.086 (0.070)	-0.033 (0.084)	-0.080 (0.071)
Income Source	0.067** (0.033)	0.031 (0.037)	0.032 (0.037)
Bank Deposit	0.086* (0.044)	0.105** (0.042)	0.085* (0.044)
Constant	0.725*** (0.065)	0.679*** (0.081)	0.725*** (0.065)
School Fixed Effect	YES	YES	YES
Observations	213	213	222
R-squared	0.084	0.077	0.070

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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