

The Impact of School-Based Financial Education on High School Students and their Teachers

Veronica Frisancho[†]

[†]Inter-American Development Bank, Research Department (vfrisancho@iadb.org)

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Financial Education

- Financial education has become a key tool to promote financial inclusion
- Initially designed as remedial: (at risk) adults
 - Modest impact on financial knowledge and behavior (Fernandes et al., 2014; Miller et al., 2014; Kaiser and Menkhoff, 2017)
 - Low take-up and attendance (Bruhn et al., 2013)
- Recent evidence of sizeable effects among the youth:
 - Malleability of their preferences and habits
 - Greater participation rates: captive audience in school-based programs

Impact of Financial Education for the Youth

- Experimental evidence on the youth still scarce but on the rise
- Meta-analysis on 10 studies exposes:
 - Robust and large average impacts on financial skills (0.17SD)
 - School-based programs with **course requirement** have sizeable impact (**0.24SD**)
(Becchetti et al., 2012; Batty et al., 2015; Bruhn et al., 2016; Furtado et al., 2017; and Bover et al., 2018)
 - Null or small impact of **voluntary** after school programs (**0.07SD**)
(Jamison et al., 2014 and Berry et al., 2018)

Shortcomings of Current Evidence

- Lack of consensus on relevant outcomes for the youth
- Little attention paid to preferences and traits associated with financial habits (Strömbäck et al., 2018; Gathergood, 2012)
- Limited evidence on academic outcomes
- No experimental evidence on long-term impact on financial behavior (Brown et al., 2014; Brown et al., 2016; and Cole et al., 2016)

Goal and Contributions of This Paper

- Measure the impact of school-based financial education on high school **students** and their **teachers**
- Contributions:
 - Provides experimental evidence for high school students
 - Measures short-term impact on students' financial knowledge and behavior, but also on soft skills, preferences, and academic outcomes
 - Measures short-term impact on teachers' financial knowledge and behavior
 - Estimates medium-run effects on students' and teachers' credit behavior

The Intervention: *Finanzas en mi Colegio*

- In 2015, the Ministry of Education, the Peruvian Association of Banks, and the Banking regulator partnered up to provide financial education in schools
- Treatment consisted of:
 - Delivery of grade-specific workbooks
 - Teachers' training (20 hours in 5 sessions)
 - Request to deliver content during a regular course

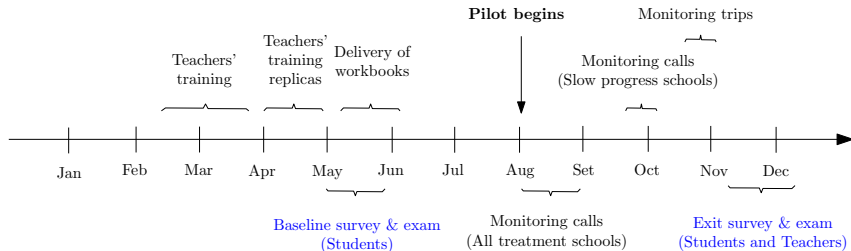
The Treatment: Lessons' Structure

Case study or Reading
Analysis of the information
Motivating questions
Integrating activities

[List of Lessons](#)

Sample, Randomization, and Timeline

- Universe: full-day public secondary schools in urban areas ($N=300$)
 - Pairing of schools by observables within region
 - Randomization within pairs Balance
- Sample: One classroom sampled at random: $\sim 20,000$ students



Empirical Strategy

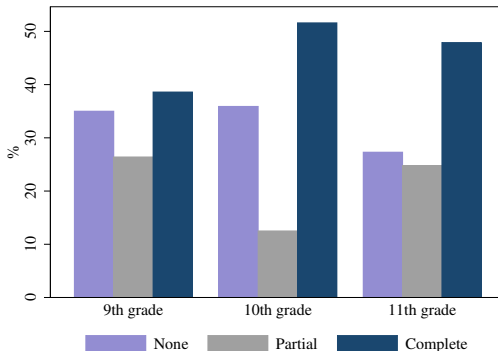
- The impact of the pilot is estimated by an ITT OLS regression:

$$y_{ijp} = \alpha + \beta T_{jp} + \gamma y_{ijp}^{\text{pre}} + \delta X_{ijp} + \sum_p \theta_p d_{jp} + \epsilon_{ijp}$$

where y_{ijp} is the outcome of interest for student/teacher i in school j from pair p .

Teachers' Compliance with the Treatment

- Modest compliance in terms of training and coverage of lessons:
 - 73% teachers attended at least one training session and 43% attended all
 - Bimodal distribution of lessons' coverage



Students: Financial Knowledge and Academic Outcomes

	Financial Literacy	GPA 2016	GPA 2017
Treatment	0.143*** [0.022]	0.094*** [0.025]	0.022 [0.021]
Number of Observations	19673	19170	11464
Mean in Control	0.30	0.53	-0.03

	Engagement	Truancy	Pr(Pass Grade)	Pr(Work)
Treatment	0.007 [0.014]	-0.003 [0.007]	0.001 [0.009]	0.000 [0.008]
Number of Observations	17596	19242	18313	19247
Mean in Control	-0.41	0.21	0.83	0.40

- Large impact on financial skills (\approx 14.8-point improvement in PISA 2015)
- (Short lived) boost on grades
- No effect on probability to work

Students: Socioemotional Skills & Preferences

	Consciousness	Self-Control	Impulsiveness	Risk averse	Hyperbolic
Treatment	-0.017 [0.015]	0.032** [0.016]	-0.003 [0.016]	0.008 [0.007]	-0.001 [0.005]
Number of Observations	15848	17391	13156	13473	13326
Mean in Control	0.09	-0.03	0.40	0.69	0.15

- Improvement in self-control, even though it was not directly targeted

Students: Consumption & Financial Habits

	Budgeting	Compares prices	Saves to buy	Bargaining
Treatment	0.006 [0.007]	0.012* [0.007]	0.013*** [0.005]	0.005 [0.007]
Number of Observations	15852	16236	16720	16236
Mean in Control	0.65	0.45	0.93	0.57

	Talks to parents	Helps parents	Financial Autonomy
Treatment	0.011* [0.007]	-0.001 [0.006]	0.011 [0.015]
Number of Observations	16528	16496	16883
Mean in Control	0.76	0.72	0.22

- Better shopping habits and greater probability of talking to parents about finances

Students: Medium-Run Credit Behavior

	Records	Credit	Formal Credit	Default/Arrears
Treatment	-0.008 [0.010]	-0.000 [0.003]	0.000 [0.003]	-0.007 [0.010]
Number of Observations	7304	7304	7304	7304
Mean in Control	0.27	0.04	0.04	0.25

- No effect on credit behavior 18 months after intervention ended

Students: Summary of Results

- ➊ Students' financial skills improve without pervasive effects on academic outcomes
- ➋ Better shopping habits
- ➌ No medium-run effect on credit behavior
 - But effect on self-control suggests potential for impact to translate into future behavior

Teachers: Financial Knowledge and Efficacy

	Financial Literacy	Self-Assessment	Teaching Efficacy
Treatment	0.320*** [0.100]	0.352*** [0.089]	0.012 [0.097]
Number of Observations	417	352	318
Mean in Control	0.03	0.00	-0.01

- Teachers' financial knowledge increased considerably and they are aware of that
- No spillover effects on general teaching efficacy

Teachers: Financial Behavior

	Saves	Saves Formally	Credit	Formal Credit	Delinquent	Delinquent Formal
Treatment	0.087** [0.035]	0.140*** [0.048]	0.043 [0.043]	0.078* [0.043]	-0.103** [0.045]	-0.060 [0.049]
Number of Observations	334	376	417	417	417	257
Mean in Control	0.84	0.64	0.65	0.58	0.67	0.17

- Greater probability to save, especially through formal mechanisms
- Greater probability to get formal loans
- Reduced likelihood to be delinquent/defaulters

Teachers: Financial Knowledge and Efficacy, by Compliance Level

	Financial Literacy	Self-Assessment	Teaching Efficacy
Treatment X None	0.091 [0.153]	0.139 [0.170]	-0.004 [0.203]
Treatment X Low	0.383** [0.159]	0.301** [0.133]	-0.195 [0.156]
Treatment X High	0.468*** [0.144]	0.593*** [0.144]	0.308* [0.170]
Number of Observations	417	352	318
Mean in Control	0.03	0.00	-0.01

- Treatment effects are increasing on compliance levels

Teachers: Financial Behavior, by Compliance Level

	Saves	Saves Formally	Credit	Formal Credit	Delinquent	Delinquent Formal
Treatment X None	0.091 [0.068]	0.053 [0.102]	0.014 [0.073]	0.040 [0.073]	-0.054 [0.073]	-0.045 [0.070]
Treatment X Low	0.063 [0.053]	0.143** [0.072]	0.010 [0.066]	0.054 [0.067]	-0.138* [0.071]	-0.087 [0.087]
Treatment X High	0.112** [0.052]	0.213*** [0.067]	0.115* [0.069]	0.147** [0.072]	-0.107 [0.083]	-0.039 [0.075]
Number of Observations	334	376	417	417	417	257
Mean in Control	0.84	0.64	0.65	0.58	0.67	0.17

- Average effects on credit and saving driven by high-level compliers

Teachers: Summary of Results

- 1 Teachers improvement in financial skills translated into better access to formal financial instruments and lower delinquency
- 2 Adults may learn more with simple materials and repetition

What Have We Learned about Financial Education for the Youth?

- Financial education for the youth is promising and **cost-effective**
 - Large impacts on financial skills and habits at a cost per student of US\$ 6.6
- What works?
 - Make it **high stakes**: school-based programs with course-requirements
 - **Train instructors** and keep them motivated
- Positive “side effects”
 - Financial education boosts academic performance in the short run
 - Keep in mind that these programs are **introductory**: what happens when they become part of the curriculum?

Can Financial Education *Today* Affect Behavior *Tomorrow*?

- Probably. But longer term follow ups are required to verify if impact permeates into behavior
- Targeting **mediating traits** more directly may pay off:
 - Experimental measures of time preferences are significant predictors of field behavior (Sutter et al., 2013)
 - Alan and Ertac (2017) implement a program that encourages forward looking-behavior in primary school
 - **More patient** intertemporal decisions in incentivized experimental tasks
 - Lowered probability of receiving a low behavior grade by about 10pp
 - **Impact persisted** almost 3 years after the intervention

Lessons for Adult Programs

- Adults may be able to learn more through different strategies:
 - Intensive training + Simple materials + Repetition
 - Hard to disentangle repetition/motivation
- Biased perception of returns from financial literacy may limit demand
 - How can we make these courses high stakes for adults?

Conclusion

- Financial competencies are becoming more relevant as economies transform
- Younger generations are ill prepared and face increasingly complex environment
- School-based financial education works!
 - Starting early pays off in the short-run
 - Some evidence on potential to affect long-run behavior
 - Better financial consumers with increased levels of trust in formal products and services

Next Steps

- Scalability
 - National efforts to include these lessons in the official curriculum
- Experiential learning
 - Promising evidence from Hinojosa et al. (2009) and Batty et al. (2017)
 - Current agenda: Partnership with MFO to collect high frequency financial data for high school graduating students
 - Entering financial data generates awareness and may change habits

Thank you

vfrisancho@iadb.org

Balance check: School characteristics

Variable	Control mean	T-C	N
Number of teachers	22.347 [12.497]	0.213 [1.415]	300
Number of students	362.973 [222.866]	-3.107 [25.412]	300
Number of classrooms	13.887 [7.516]	-0.073 [0.841]	300
Number of students, 3rd grade	72.060 [42.631]	0.747 [4.952]	300
Number of students, 4th grade	68.880 [41.459]	-0.500 [4.767]	300
Number of students, 5th grade	64.933 [42.250]	-0.207 [4.692]	300
Number of classrooms, 3rd grade	2.773 [1.542]	0.020 [0.171]	300
Number of classrooms, 4th grade	2.660 [1.423]	-0.007 [0.164]	300
Number of classrooms, 5th grade	2.553 [1.412]	-0.020 [0.161]	300
Passing rate, 3rd grade	0.702 [0.141]	-0.005 [0.016]	300
Passing rate, 4th grade	0.742 [0.128]	-0.010 [0.015]	300
Passing rate, 5th grade	0.801 [0.122]	0.006 [0.015]	300
Dropout rate, 3rd grade	0.032 [0.036]	-0.003 [0.004]	300
Dropout rate, 4th grade	0.031 [0.038]	-0.002 [0.004]	300
Dropout rate, 5th grade	0.018 [0.023]	0.000 [0.003]	300

Note: Significance levels (* 10%; ** 5%; *** 1%) captured through OLS estimation with robust standard errors. Standard errors(deviations) of coefficients(control means) are in brackets.

Balance check: Student characteristics (I)

Variable	Control mean	T-C	N
Sex	1.504 [0.500]	-0.010 [0.017]	20958
Age - Baseline	15.177 [1.220]	-0.003 [0.034]	18597
Ratio of household members to bedrooms	1.852 [0.993]	0.007 [0.024]	20134
Mother's education: Primary or less	0.428 [0.495]	0.006 [0.027]	19502
Mother's education: Secondary	0.420 [0.494]	0.008 [0.017]	19502
Mother's education: More than secondary	0.152 [0.359]	-0.015 [0.016]	19502
Lives with both parents	0.590 [0.492]	-0.000 [0.016]	20379
Asset index	0.000 [1.000]	-0.008 [0.083]	20496
High level of parental supervision	0.755 [0.430]	0.005 [0.010]	19450
Has dinner with parents 7 days a week	0.321 [0.467]	-0.001 [0.011]	20576
Truancy in the past 2 weeks	0.058 [0.234]	-0.005 [0.005]	20595
GPA 2015	13.752 [1.488]	-0.029 [0.059]	18031

Note: Significance levels (* 10%; ** 5%; *** 1%) captured through OLS estimation with robust standard errors. Standard errors(deviations) of coefficients(control means) are in brackets.

Balance check: Student characteristics (II)

Variable	Control mean	T-C	N
Impulsiveness	-0.000 [0.879]	0.017 [0.022]	17524
Conscientiousness	-0.000 [0.884]	0.004 [0.024]	15788
Self-control	0.000 [0.887]	-0.002 [0.023]	16958
Time inconsistency: hyperbolic	0.126 [0.332]	-0.006 [0.005]	18364
Risk averse	0.708 [0.455]	0.007 [0.010]	19275
No previous exposure to financial education	0.368 [0.482]	-0.015 [0.013]	19276
Financial literacy raw score	8.060 [2.947]	0.119 [0.128]	20764
Financial autonomy (standardized)	-0.000 [1.000]	0.028 [0.023]	19614
Prepares a personal budget	0.565 [0.496]	-0.012 [0.010]	18458
Helps family with budget	0.679 [0.467]	0.005 [0.013]	18686

Note: Significance levels (* 10%; ** 5%; *** 1%) captured through OLS estimation with robust standard errors. Standard errors(deviations) of coefficients(control means) are in brackets.

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Lessons by grade

9th	10th	11th
1. Needs and resources 1.1. Wants vs. needs 1.2. Opportunity cost 1.3. Savings/credit, expenditure/ investment 1.4. Economic agents	1. Financial products and services 1.1. Financial system 1.2. Saving vs. Investment 1.3. Assets and liabilities 1.4. Financial future and capacity to pay 1.5. Adequate usage of financial products and services	1. Responsible financial consumer 1.1. Capacity to pay 1.2. Overindebthness 1.3. Financial consumer's rights 1.4. Protection of consumer rights 1.5. The State and financial stability
2. Budgeting 2.1. Financial plan 2.2. Income and expenses 2.3. Budgeting 2.4. Usefulness of budgets		2. Information 2.1. Transparency in financial contracts 2.2. Consumers' responsibilities

Data

- One classroom per grade and all target teachers
- Survey data and administrative student records

	Baseline	Merge with FU	Merge with admin
Students	20,908	16,735	19,307
Teachers		486	