Online Appendix of "The Impact of High School Financial Education on Financial Knowledge and Choices: Evidence from a Randomized Trial in Spain"

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Table W.1: Choices in the Convex Time Budget Task (CTBT)

Sheet 1: What do you prefer?		Get __ € TODAY	and __ € IN ONE WEEK	Please, pick 1 out of the 4 options in each part
Part 1	Choice a	6	0	a
	Choice b	4	2	b
	Choice c	2	4	c
	Choice d	0	6	d
Part 2	Choice a	6	0	a
	Choice b	4	4	b
	Choice c	2	8	c
	Choice d	0	12	d
Part 3	Choice a	6	0	a
	Choice b	4	6	b
	Choice c	2	12	c
	Choice d	0	18	d
Sheet 2: What do you prefer?		**Get __ € TODAY**	**and __ € IN TWO WEEKS**	**Please, pick 1 out of the 4 options in each part**
Part 1	Choice a	6	0	a
	Choice b	4	2	b
	Choice c	2	4	c
	Choice d	0	6	d
Part 2	Choice a	6	0	a
	Choice b	4	4	b
	Choice c	2	8	c
	Choice d	0	12	d
Part 3	Choice a	6	0	a
	Choice b	4	6	b
	Choice c	2	12	c
	Choice d	0	18	d
Sheet 3: What do you prefer?	**Get __ € IN ONE WEEK**		**and __ € IN TWO WEEKS**	**Please, pick 1 out of the 4 options in each part**
Part 1	Choice a	6	0	a
	Choice b	4	2	b
	Choice c	2	4	c
	Choice d	0	6	d
Part 2	Choice a	6	0	a
	Choice b	4	4	b
	Choice c	2	8	c
	Choice d	0	12	d
Part 3	Choice a	6	0	a
	Choice b	4	6	b
	Choice c	2	12	c
	Choice d	0	18	d

Table W.2: Program Implementation

	Total	Public	Concerted	Private	Concerted or private
	N=1,228	N=762	N=425	N=41	N=466
Number of hours:					
Minimum	4	4	9	15	9
25th percentile	10	8	10	15	10
Median	10	10	11	17	15
75th percentile	18	16	20	17	20
90th percentile	20	20	22	17	22
Number of lessons taught (out of 10)	7.4	7.0	8.1	7.0	8.0
Fraction that made independent evaluation	0.37	0.35	0.39	0.51	0.40
Fraction that assigned homework	0.31	0.29	0.39	0.00	0.35
Subject where material was delivered:					
Maths	0.17	0.08	0.24	1.00	0.31
Social Sciences	0.21	0.17	0.31	0.00	0.28
Weekly hour with tutor	0.20	0.28	0.07	0.00	0.06
Citizenship	0.11	0.15	0.05	0.00	0.05
Alternative to religion	0.10	0.12	0.08	0.00	0.07
Other	0.22	0.20	0.26	0.00	0.24
Teacher's specialization:					
Social Sciences	0.37	0.43	0.31	0.00	0.28
Economics	0.32	0.37	0.20	0.49	0.22
Maths	0.12	0.08	0.16	0.51	0.19
Computing science	0.09	0.00	0.26	0.00	0.24
Other	0.10	0.12	0.08	0.00	0.07

Source: on-line surveys to 55 teachers in treated schools (overall number of teachers: 58). As many teachers split the material across subjects, the unit of analysis is the class the student belongs to. Hence, the number of hours devoted to "Finanzas para todos" is the sum of hours across all subjects. The subject where the material was delivered is the one using the largest number of hours.

Table W.3: Number of students and sample selection criteria

Panel A: 9th grade participants in the December 2014 test

1. Total number of students registered in the school in December 2014	3,335
2. Students that fully completed the test	2,932
3. Students that left the test early	10
4. Students that could not complete the test due to technical problems	108
5. Students that did not attend the test	285
6. Sample used in balancing tests in Table 2 (2+3+4)	3,050

Panel B: 9th grade participants in the December 2014 and March 2015 tests

		March test					
		1. Left school	2. Completed	3. Left early	4. Incomplete	5. Did not attend	6. Refused	Total
	1. Not in school in December	0	23	0	0	0	0	23
December test	2. Fully completed the test	14	2,696	1	37	182	2	2,932
	3. Left the test early	0	8	0	0	2	0	10
	4. Could not complete the test	1	94	0	1	12	0	108
	5. Did not attend the test	3	204	0	6	70	2	285
Total		18	3,025	1	44	266	4	3,358

Balanced sample in March 2015 (row 2 - information available in the pre-test; column 2 - information available in the post-test): 2,696.

Table W.4: The effect of the financial literacy program on normalized tests scores in the subsample without non-compliant schools

	Unbalanced panel		Balanced panel	
	No strata (1)	Strata dummies (2)	Strata dummies (3)	Strata dummies† (4)
Panel A: Treated students vs controls (9th graders). March				
Treated	0.143**	0.166**	0.176**	0.190***
	(0.069)	(0.070)	(0.067)	(0.063)
R^2	0.30	0.32	0.36	0.36
Number of students (schools)	2942 (75)	2942 (75)	2621 (75)	2621 (75)
Panel B: Non-treated students in treated schools vs those in control schools (10th graders). March				
"Treated"	-0.081	-0.031	-0.074	-0.086
	(0.092)	(0.098)	(0.094)	(0.088)
R^2	0.28	0.30	0.34	0.34
Number of students (schools)	1514 (75)	1514 (75)	1317 (75)	1317 (75)
Panel C: Treated students vs controls (9th graders). June				
Treated	-0.089	-0.064	-0.059	-0.051
	(0.085)	(0.075)	(0.074)	(0.068)
R^2	0.27	0.30	0.34	0.34
Number of students (schools)	2607 (75)	2607 (75)	2330 (75)	2330 (75)

Notes: the dependent variable is the normalized score in the March 2015 (or June 2015) test. All models include as covariate the score in the December pre-test. Models (2) and (3) include strata dummies. †Model (4) merges two strata where no school assigned to treatment accepted to participate. Estimation method: OLS. The standard errors (in parentheses) are corrected for heteroscedasticity and arbitrary correlation at the school level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table W.5: DID estimates of the effect of the financial literacy program on normalized tests scores

| | Unbalanced panel | | Balanced panel | |
| | No strata | Strata dummies | Strata dummies | Strata dummies[†] |
	(1)	(2)	(3)	(4)
Panel A: Treated students vs controls (9th graders). March 2015				
Treated×After	0.158**	0.158**	0.157***	0.157***
	(0.063)	(0.062)	(0.059)	(0.059)
Fraction correct in pre-test	0.55	0.55	0.47	0.47
R^2	0.002	0.049	0.002	0.050
Number of students (schools)	5,907 (77)		5,468 (77)	
Panel B: Non-treated students in treated schools vs those in control schools (10th graders). March 2015				
"Treated"×After	-0.051	-0.056	-0.108	-0.108
	(0.084)	(0.084)	(0.077)	(0.078)
R^2	0.002	0.042	0.004	0.043
Number of students (schools)	2,966 (77)		2,732 (77)	

Notes: the sample pools students in the December 2014 and March 2015 tests. Estimation method: Differences-in-Differences. The dependent variable is the normalized score in each test (the March score in the March sample and the pre-test in the December sample). Models 2 and 3 include strata dummies. [†]Model 4 merges two strata where no school assigned to treatment accepted to participate. Covariates also include the variable After (an indicator variable taking value 1 for the March sample) and the variable Treated (a dummy taking value 1 for students in treated schools). Standard errors (in parentheses) are clustered at the school level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table W.6: DID estimates of the effect of the financial literacy program on several outcomes

	Hypothetical saving choices: Earlier choice† (pooled)		Talks to parents about economics: Overall‡		Money for tasks at home/ work in family business	
	DID	+ individual fixed effects	DID	+ individual fixed effects	DID	+ individual fixed effects
	(1)	(2)	(3)	(4)	(5)	(6)
Treated×After	-0.031*	-0.032*	0.104**	0.111*	0.041**	0.041
	(0.017)	(0.019)	(0.043)	(0.061)	(0.020)	(0.029)
R^2	0.201	0.426	0.050	0.748	0.003	0.714
Number of choices†/students (schools)	16,157 (77)		5,468 (77)		5,468 (77)	

Notes: the sample pools students in the December 2014 and March 2015 tests. Estimation method: Differences-in-Differences (odd-numbered columns) and Differences-in-Differences with a student specific fixed effect (even-numbered columns). The dependent variable is the outcome in each survey (the March answer in the March sample and the December answer in the December sample). †Earlier choice pools the four hypothetical choices and controls for three dummies that indicate the particular temporal choice. The variable treated measures to what extent those who received the course between January and March tend to choose to receive the hypothetical payment earlier, regardless of the time horizon and the interest rate. The number of cases is 16,157 stacked student-choice-surveys (=2,734 students*2 surveys*3 choices minus 19 cases of non response). The choice between 100€today vs. 120 in six weeks was not included in the December survey and hence is not included for the DID specification. ‡Overall is a categorical variable, from 1 never to 5 every day. Covariates include strata dummies, the variable After (an indicator variable taking value 1 for the March sample) and the variable Treated (a dummy taking value 1 for students in treated schools). Standard errors (in parentheses) are clustered at the school level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table W.7: The effect of the financial literacy program on financial knowledge, attitudes and savings of treated and non-treated students

	Non-treated students 10th graders March	Treated students 9th graders March
Panel A: Hypothetical saving choices		
Treated school	-0.016	-0.026**
	(0.013)	(.012)
Panel B: Sources of income		
Treated school	-0.032	0.038*
	(0.027)	(.021)
Panel C: Talks to parents about economics		
Treated school	0.006	0.121**
	(0.0069)	(0.054)

Notes: All models estimated by OLS, including stratification dummies and lagged values of a similar hypothetical choice in December 2014. The specification in Panel A pools the four hypothetical choices and controls for three dummies that indicate the particular temporal choice The variable treated measures to what extent those who received the course between January and March tend to choose to receive the hypothetical payment earlier, regardless of the time horizon and the interest rate. Standard errors (in parentheses) are clustered at the school level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table W.8: Balancing tests at baseline for the Madrid sample

	Control (301 10th graders)	Treatment (695 9th graders)	Difference
Variables used in the stratification:			
Public school	0.61	0.60	-0.019
Concerted/private	0.39	0.40	0.019
Demographic characteristics:			
Female	0.57	0.45	-0.115***
Foreign born	0.17	0.15	-0.027
Older than normal progression	0.28	0.23	-0.047
Expected age finish school	21.60	21.45	-0.155
Expect to finish at 18 or earlier	0.15	0.13	-0.015
Hypothetical preferences:			
Prefers 100 euro today to 120 in three weeks	0.27	0.25	-0.014
Prefers 100 euro today to 150 in three weeks	0.09	0.12	0.033
Prefers 100 euro today to 180 in three weeks	0.04	0.06	0.018
Sources of income:			
Family business/allowance home duties	0.30	0.32	0.028
Unconditional allowances	0.78	0.79	0.005
Occasional jobs	0.28	0.22	-0.060*
Talk to parents about economics:			
More than once a week	0.21	0.18	-0.027
Once a week	0.21	0.24	0.025
Less than once a week	0.35	0.33	-0.025
Never	0.23	0.26	0.027
Labor status of father:			
Self-employed	0.26	0.24	-0.020
Employee	0.61	0.63	0.023
Unemployed	0.10	0.08	-0.025
Does not work/other	0.04	0.06	0.021
Labor status of mother:			
Self-employed	0.16	0.15	-0.015
Employee	0.51	0.55	0.046
Unemployed	0.08	0.10	0.020
Does not work/other	0.25	0.20	-0.051

Source: information about demographics comes from the December survey to students. Information about grade repetition (date of birth) comes from school records.

Notes: sample of 996 students from 20 schools in Madrid doing the incentivized saving task in June 2015 and present in the test of December 2014. Control group includes 10th graders. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table W.9: The effect of the financial literacy program on the probability of inconsistent choices in the incentivized saving task

| Dependent variable: | Inconsistent choices | |
Sample of treated	Jan.-March	April-June
Treated	-0.020	-0.024
	(0.029)	(0.021)
Immediate payment	-0.005	0.005
	(0.012)	(0.013)
Interest rate	0.064***	0.044***
	(0.013)	(0.006)
Delayed payment	0.020	-0.010
	(0.014)	(0.012)
Constant	0.027	0.010
	(0.035)	(0.026)
Sample size	3,534	4,290
Standard deviation dependent variable	0.33	0.32
R^2	0.0115	0.014

Notes: Sample of 1005 students from 20 schools in Madrid doing the incentivized saving task in June 2015 and present in the December test. OLS regressions using as the dependent variable an indicator of choice inconsistent with revealed preference (euros allocated to earlier date increase when interest rate increases). Standard errors (in parentheses) clustered at the school-grade level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table W.10: Decomposing choices into present bias, patience and curvature of the utility function

Panel A: Determinants of log(euros allocated to earlier date)-log(euros allocated to later date)		
Estimation method:	(1) OLS	(2) Tobit
Treated*Delay	-0.348*	-0.616
	(0.179)	(0.532)
Treated*Ln (Gross Interest Rate)	-0.625	-1.201**
	(0.461)	(0.532)
Treated*Immediate	-0.098	-0.361
	(0.195)	(0.530)
Delay (1 vs 2 weeks)	0.852**	1.549**
	(0.113)	(0.294)
Ln (Gross Interest Rate)	-5.249**	-7.895**
	(0.336)	(0.367)
Immediate payment	-1.121**	-1.991**
	(0.164)	(0.361)
Treated	0.619	0.806
	(0.362)	(0.633)

Panel B: Discounting and Curvature Parameter Estimates						
	Treated	Control	Difference	Treated	Control	Difference
Weekly discount factor	0.918	0.850	0.068	0.902	0.821	0.081
	(0.022)	(0.017)	(0.029)	(0.032)	(0.033)	(0.046)
Present bias	1.231	1.238	-0.007	1.295	1.287	0.008
	(0.022)	(0.042)	(0.047)	(0.0654)	(0.069)	(0.010)
CRRA curvature	0.830	0.809	0.020	0.890	0.873	0.017
	(0.009)	(0.012)	(0.015)	(0.006)	(0.005)	(0.008)

Number of observations: 5,265 choices (585 students receiving the course between January and March 2015).

Notes: The upper panel shows the coefficients of a regression of the logarithm of the euros allocated to the earlier date minus the logarithm of the euros allocated to the later one. The covariates are those shown in rows, plus strata fixed effects and dummies with choices at baseline. Choices of 0 are given a 1 cent. The Tobit specification accounts for accumulation at 0 euros in the earlier date (49% of observations). Panel B shows the discounting and curvature parameter estimates - see Andreoni and Sprenger (2012). The weekly discount factor is the exponentiated ratio between the coefficients of delay and ln (Gross Interest Rate) in Panel A. Standard errors calculated by the delta method.

Table W.11: Sample composition by strata

	Public schools	Non-public schools
Financial knowledge at baseline		
Fraction of correct answers	0.58	0.62
Demographic characteristics:		
Foreign born	0.14	0.08
Older than normal progression	0.28	0.17
Expectations:		
Expects to finish at most HS academic track	0.17	0.10
Expects to finish at most HS vocational training	0.28	0.18
Expects to finish college	0.72	0.82
Labor status of father:		
Self-employed	0.24	0.32
Employee	0.59	0.57
Unemployed	0.17	0.11

Source: information about demographics comes from the December survey to students. Information about grade repetition (date of birth) comes from school records.

Notes: The samples exclude one stratum that mixes 1 public and 2 non-public centers. That stratum originally grouped high schools who intended to teach the course to 7th or 8th graders. The sample of 42 public schools contains 1,855 9th graders, while the sample of 32 non-public schools comprises 1,087 9th graders. Students with special educational needs or who did not take the December test are excluded.

Table W.12: Balancing tests at baseline by strata

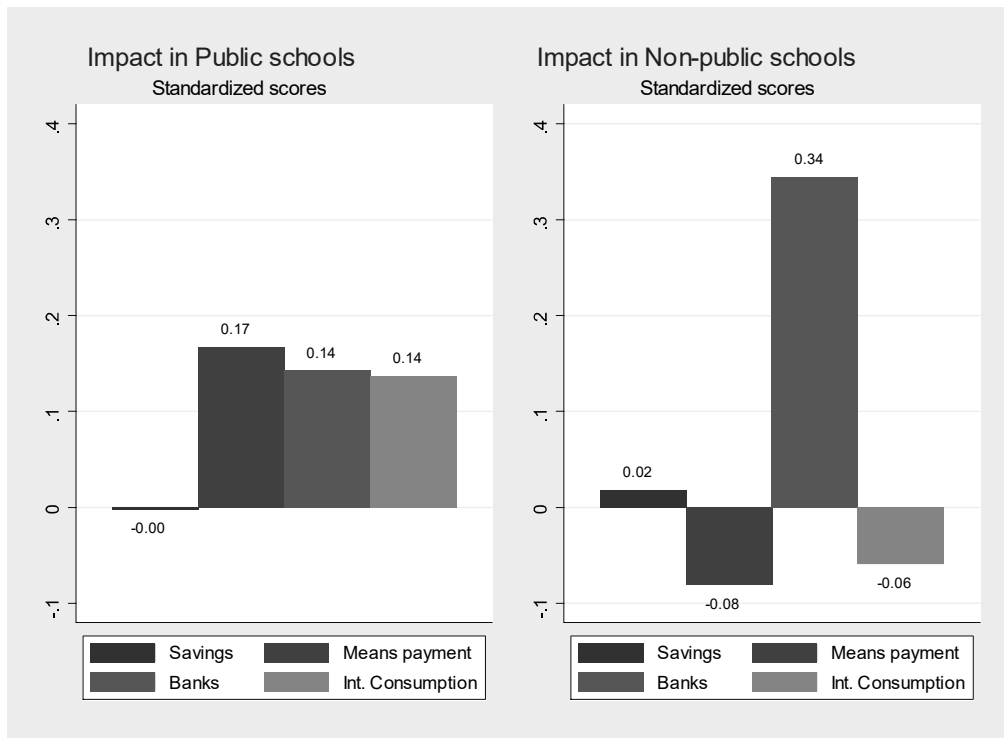|	Public schools			Non-public schools		
	Treated (19 schools)	Control (23 schools)	p-value of the difference	Treated (14 schools)	Control (18 schools)	p-value of the difference
Fraction of correct answers in pre-test	0.572	0.585	0.714	0.624	0.619	0.426
Madrid	0.324	0.303	0.438	0.270	0.358	0.357
Female	0.475	0.494	0.484	0.464	0.527	0.036**
Foreign born	0.164	0.142	0.526	0.105	0.066	0.462
Older than normal progression	0.359	0.256	0.089	0.219	0.171	0.791
Expected age to finish school	20.860	21.256	0.060	21.452	21.683	0.666
Expects to finish at 18 or earlier	0.208	0.171	0.205	0.130	0.098	0.638
Prefers 100€ today to 120 in 3 weeks	0.259	0.265	0.628	0.288	0.280	0.754
Prefers 100€ today to 150 in 3 weeks	0.160	0.132	0.311	0.137	0.120	0.493
Prefers 100€ today to 180 in 3 weeks	0.080	0.080	0.791	0.059	0.058	0.764
Family business/allowance home duties	0.310	0.313	0.811	0.338	0.292	0.201
Unconditional allowances	0.777	0.736	0.094	0.806	0.831	0.620
Occasional jobs	0.210	0.171	0.260	0.199	0.210	0.882
Talk to parents about economics:						
More than once a week	0.216	0.235	0.168	0.234	0.196	0.806
Once a week	0.211	0.224	0.413	0.234	0.219	0.287
Less than once a week	0.290	0.305	0.582	0.330	0.330	0.781
Never	0.283	0.236	0.045	0.202	0.255	0.086*
Labor status of father:						
Self-employed	0.207	0.264	0.082	0.361	0.294	0.028**
Employee	0.606	0.563	0.194	0.523	0.596	0.216
Unemployed	0.128	0.112	0.821	0.064	0.067	0.106
Other	0.059	0.061	0.995	0.052	0.042	0.997
Labor status of mother:						
Self-employed	0.118	0.154	0.163	0.233	0.169	0.084*
Employee	0.525	0.501	0.536	0.482	0.572	0.125
Unemployed	0.100	0.100	0.725	0.077	0.076	0.695
Other	0.257	0.244	0.739	0.208	0.183	0.960

Source and notes: see Table W.11.

Table W.13: The effect of the financial literacy program by strata

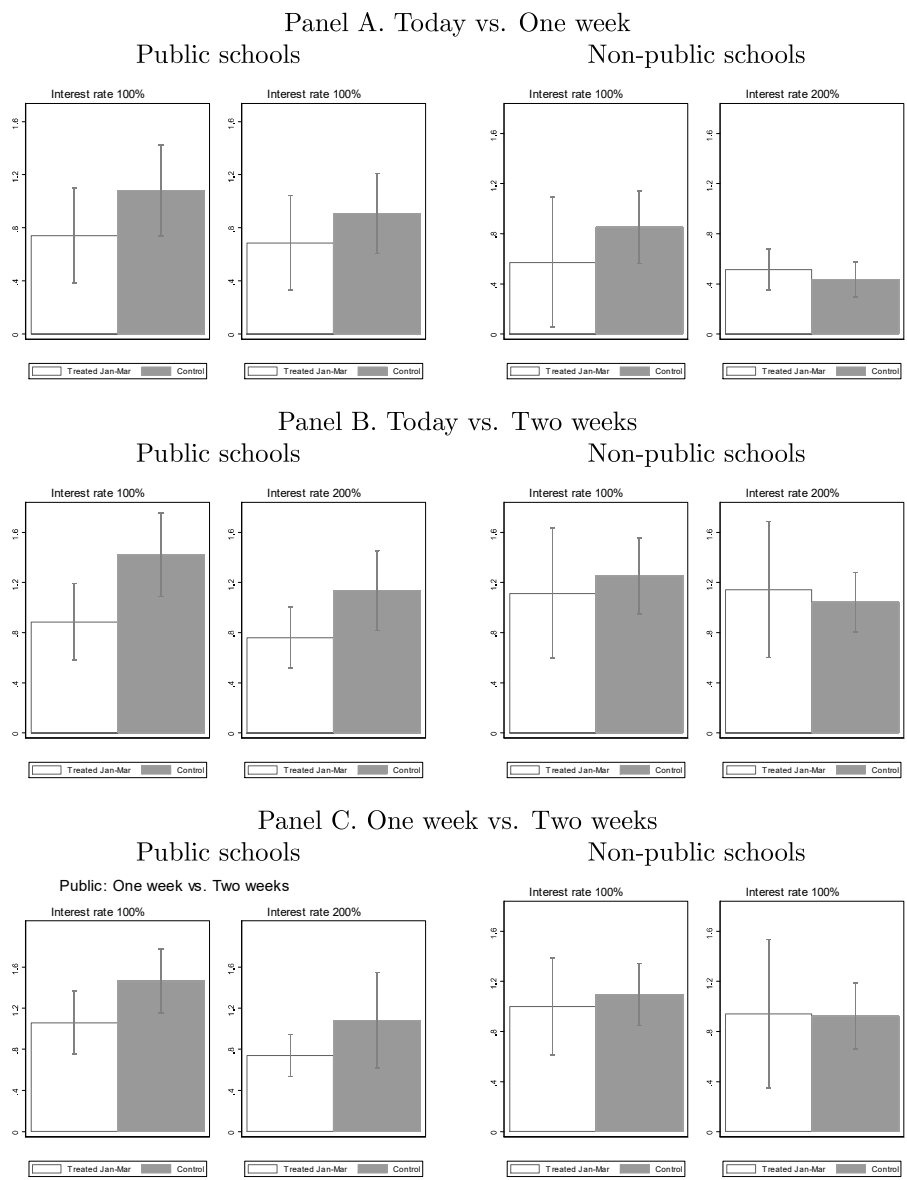|	Public	Non-public	p-value of the difference
Panel A: Talks to parents about economics (March 2015)			
1. Talks to parents about economics (overall)	0.079	0.152**	0.428
	(0.077)	(0.072)	
Panel B: Income sources (March 2015)			
2. Occasional jobs in the market/selling things (online, street markets)	-0.022*	0.037	0.052
	(0.012)	(0.027)	
3. Money for tasks at home/family business	0.034	0.089***	0.148
	(0.030)	(0.026)	
Panel C: Hypothetical saving choices (March 2015)			
4. Earlier choice (pooled)	-0.017	-0.038**	0.373
	(0.016)	(0.016)	

Notes: Each cell shows the estimate and standard error of the variable "treated" in regression where the dependent variable is shown in the row and the covariates include the lagged dependent variable and strata dummies. All specifications estimated by OLS but the one in row 1, that is the latent coefficient of an ordered Probit with outcomes from never to more than once a week. Standard errors (in parentheses) clustered at the school level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Figure W.1: Decomposing the gains in financial knowledge in specific areas or personal finance
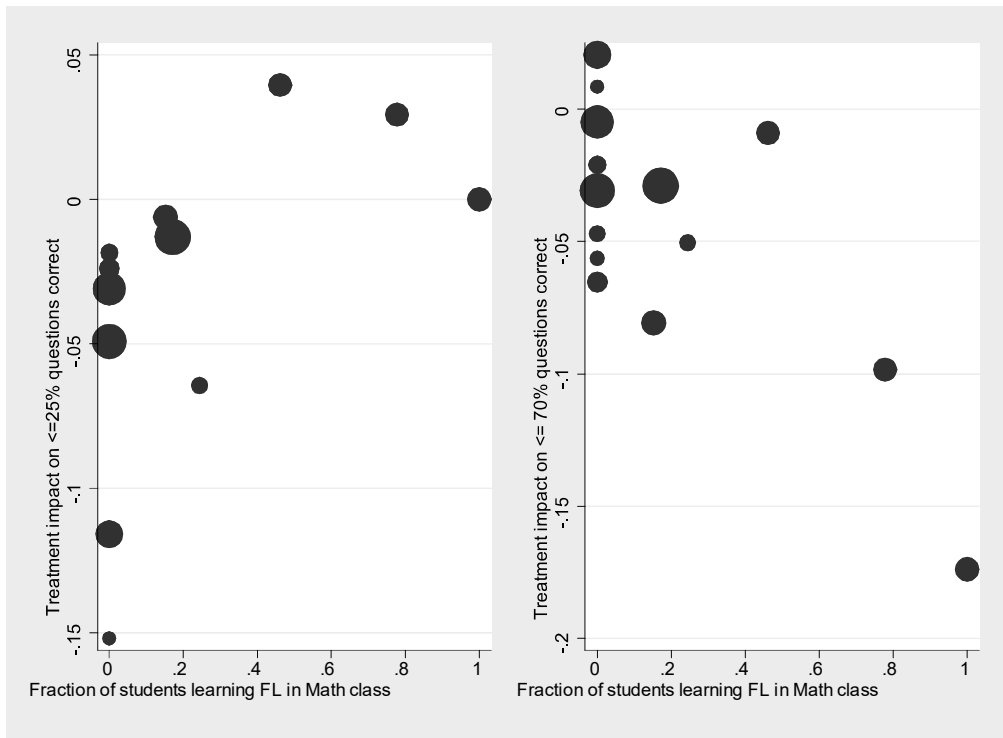

Notes: The left (right) panel shows the impact of the FL course in public (non-public) schools in the scores of four different areas: savings, means of payment, banks and intelligent consumption. Each estimate is obtained by type-of-school specific regressions of the score in each part of the test (normalized) on the treatment dummy, the score at baseline and the strata dummies using separate samples of public and non-public schools.

Figure W.2: Euros allocated to sooner payment in the incentivized saving task by strata (June 2015): early treatment students

Panel A. Today vs. One week

Public schools   Non-public schools

Panel B. Today vs. Two weeks

Public schools   Non-public schools

Panel C. One week vs. Two weeks

Public schools   Non-public schools

Notes: Treated students are 9th graders in Madrid receiving the course in January-March 2015. Controls are all 10th graders in Madrid (strata 1, 2, 3, 7 and 8 in Table A.1). Estimates are means, unadjusted by covariates or strata dummies. Table 5 shows adjusted estimates.

Figure W.3: The distribution of financial knowledge and the course in which the material was taught

Notes: The left (right) panel shows the relationship between strata-specific impacts of the course on the fraction of students answering correctly less than 25% (70%) of the questions correctly in the March test and the fraction of students in the strata receiving the course as part of Math. The strata-specific impacts are obtained by strata-specific regressions of the dependent variable on a dummy of treated and the student score at baseline. The information on the subject where the course was taken was elicited from surveys to teachers.