Financial Education and Spillover Effects

Theodosis Kallenos
Central Bank of Cyprus &
University of Cyprus

Andreas Milidonis
University of Cyprus

George Nishiotis[†],
University of Cyprus

Stavros Zenios
University of Cyprus &
Cyprus Academy of Sciences,
Letters, and Arts, &
Bruegel

Asia Pacific Financial Education Institute

Singapore
November 17, 2022

Outline

1. Motivation

2. Literature on financial education (FinEd) & spillover effects

3. Background: Financial Literacy Levels and Initiatives in Cyprus

4. Introduction of the Financial Education course

5. Survey: structure and method used

6. Sample description

7. Results

   1. Increase in Financial Knowledge score in (treated) students

   2. FinEd spillover effect to Students' parents

8. Conclusion

Motivation & Research Question

- Cyprus has low financial literacy scores.

- No significant financial education in secondary education in Cyprus.

- The University of Cyprus decided to introduce a new course on Financial Education in the Fall semester 2020.

- We use the introduction of this course, to measure the impact on financial knowledge on both the students but also their immediate network. Research question:

    =>Is there a financial knowledge spillover effect?

Literature (1/2)

The literature has focused on:

- Financial Literacy of young individuals studied in the literature: Lusardi, Mitchell, and Curto, 2010; Jorgensen and Savla, 2010; Mandell, 2008.

- Evaluation of intervention programs: Brugiavini et al., 2018; Lührmann, Serra-Garcia, and Winter, 2015; Walstad, Rebeck, and MacDonald, 2010.

- Evaluating Financial Education programs (Lusardi, 2013).

$\Rightarrow$ Positive externalities from spillovers effects, on larger audiences.

Literature (2/2)

- Financial education interventions face critical limitations and challenges (see e.g. Lusardi and Mitchell, 2014; Lusardi, 2013; Lyons and Neelakantan, 2008 and Fox, Bartholomae, and Lee, 2005):
  - Difficulty proving causality,
  - Potential biases,
  - The lack of a control group.
- Literature on spillover effects of financial knowledge is scant:
  - Duflo and Saez (2003): retirement benefits information fair increase enrolment in Tax Deferred Accounts.
  - Haliassos, Jansson, and Karabulut (2020): saving and participation in stockholding increases among refugees allocated in areas with financially literate neighbors.

What does this paper do? (1/2)

- We evaluate the impact of a **<u>new</u>**, semester-long, university course on financial education (FinEd), on (treated) students and their parents.

    => We test for financial education spillover effects.

- FinEd Intervention longer and more engaging than previous studies:
    - Semester-long university course (13 weeks)
    - twice a week (75 minutes each time)
    - Students are assessed through a major project and two exams.

- How do we address issues raised by literature?
    - Causality: Introduction of new course (1ˢᵗ public university)
    - Method: Survey at beginning and end of semester.
    - Control group: We have one.
    - Potential biases: Demographics and robustness tests.

Preview of Results

1. Financial Knowledge of Treated Students increases (No significant change in control group), especially in those with low initial score.

2. Evidence of Financial Knowledge spillover effects from (treated) students to parents.

3. Result driven by sample of students and parents with frequent face-to-face interaction. **=> evidence of a spillover effect.**

=> <u>Policy Implications</u>: Treated individuals transfer knowledge through their face-to-face interactions, suggesting multiplier effects from the introduction of financial education programs in curriculums.

Financial literacy in Cyprus

- 2013 Crisis in Cyprus (One of the worst crises):
    - Concurrent banking and sovereign debt crisis.
    - Unprecedented bail-in of banking sector (€5.8B; 24% of GDP).
    - Memorandum of Understanding with Troika up to €10B.
- Crisis highlighted population's lack of financial knowledge.
- S&P Global Financial Literacy Survey (2015): Cyprus ranks among the lowest from the European Union countries with only 35% of adults being considered as financially literate.
- Environment of low financial literacy (Andreou and Philip, 2018; Andreou and Anyfantaki, 2021; Central Bank of Cyprus, 2021).
- Demertzis, Domínguez-Jiménez, and Lusardi (2020) find that Cyprus ranks very high in terms of financial fragility in the European Union.

FinEd Intervention (1/3)

- September 2020: The University of Cyprus (UCY) became the 1st public university in Cyprus to introduce a FinEd university course.

- Mandatory course for Accounting and Finance, 1st year students.

- Elective course for other UCY students; fully subscribed ever since.

- Other initiatives after the course:
  - December 2020: UCY participates in Ad- hoc Committee to draft the National Strategy of Financial Literacy and Education.
  - Fall 2021: 2nd largest public university followed with personal finance course.
  - Fall 2021: FinEd introduction at 1 private, secondary education high school.
  - June 2022: National Strategy adopted by Government.
  - Fall 2022: 14 additional private schools adopt the course (2/3 of student population in private secondary education)

FinEd Intervention (2/3)

Who?

- Treatment group: UCY students who took course, and their parents.
- Control group: UCY students not taking course, and their parents.

How?

- Evaluation: pre-test (09/20) and post-test evaluations (12/20).
- 2018 OECD/INFE Toolkit for measuring financial literacy.
- Questionnaire translated to Greek following OECD instructions.

Issues addressing potential contamination:

- Course coincided with the Covid-19 pandemic period.
- Strict health protocols hence minimal interaction among students.
- First vaccines arrived in Cyprus after the end of the course.

FinEd Intervention (3/3)

Questionnaire:

- Uses 7 questions to measure Financial Knowledge (OECD, 2018).
- Additional demographic questions.

- The students' questionnaire includes two additional questions to measure the frequency of interaction:

  1. **Do you live with your parents?**
     - Yes / No / Don't know / Refused to answer.
  2. If "No" in (1) above, then: **How many times per week do you personally interact (face-to-face) with your parents?**
     - Everyday/ 5-6 times per week / 3-4 times per week / 1-2 times per week / Less than 4 times a month

Sample description: Students

		Treatment		Control		Total	
		#	%	#	%	#	%
Treatment		134	47.18%	150	52.82%	284	100.00%
Gender	Female	85	30.04%	116	40.99%	201	71.02%
	Male	48	16.96%	34	12.01%	82	28.98%
Age Group	Below 30	130	45.77%	146	51.41%	276	97.18%
	30 and above	4	1.41%	4	1.41%	8	2.82%
Net Household Income	Up to €960	9	3.20%	23	8.19%	32	11.39%
	Between €960 and €1,600	27	9.61%	28	9.96%	55	19.57%
	€1,600 or more	60	21.35%	52	18.51%	112	39.86%
	Don't Know	37	13.17%	45	16.01%	82	29.18%

Sample description: Parents

		Treatment		Control		Total	
		#	%	#	%	#	%
Treatment		84	62.22%	51	37.78%	135	100%
Gender	Female	54	40.91%	30	22.73%	84	63.64%
	Male	27	20.45%	21	15.91%	48	36.36%
Age Group	Below 50	47	36.15%	28	21.54%	75	57.69%
	50 and above	33	25.38%	22	16.92%	55	42.31%
Education Level	University or higher	44	33.85%	32	24.62%	76	58.46%
	Lower than University	36	27.69%	18	13.85%	54	41.54%
Net Household Income	Up to 960 €	6	4.62%	3	2.31%	9	6.92%
	Between €960 and €1,600	19	14.62%	11	8.46%	30	23.08%
	€1,600 or more	53	40.77%	33	25.38%	86	66.15%
	Don't Know	2	1.54%	3	2.31%	5	3.85%

Results (1):
Increase in Students' Financial Knowledge
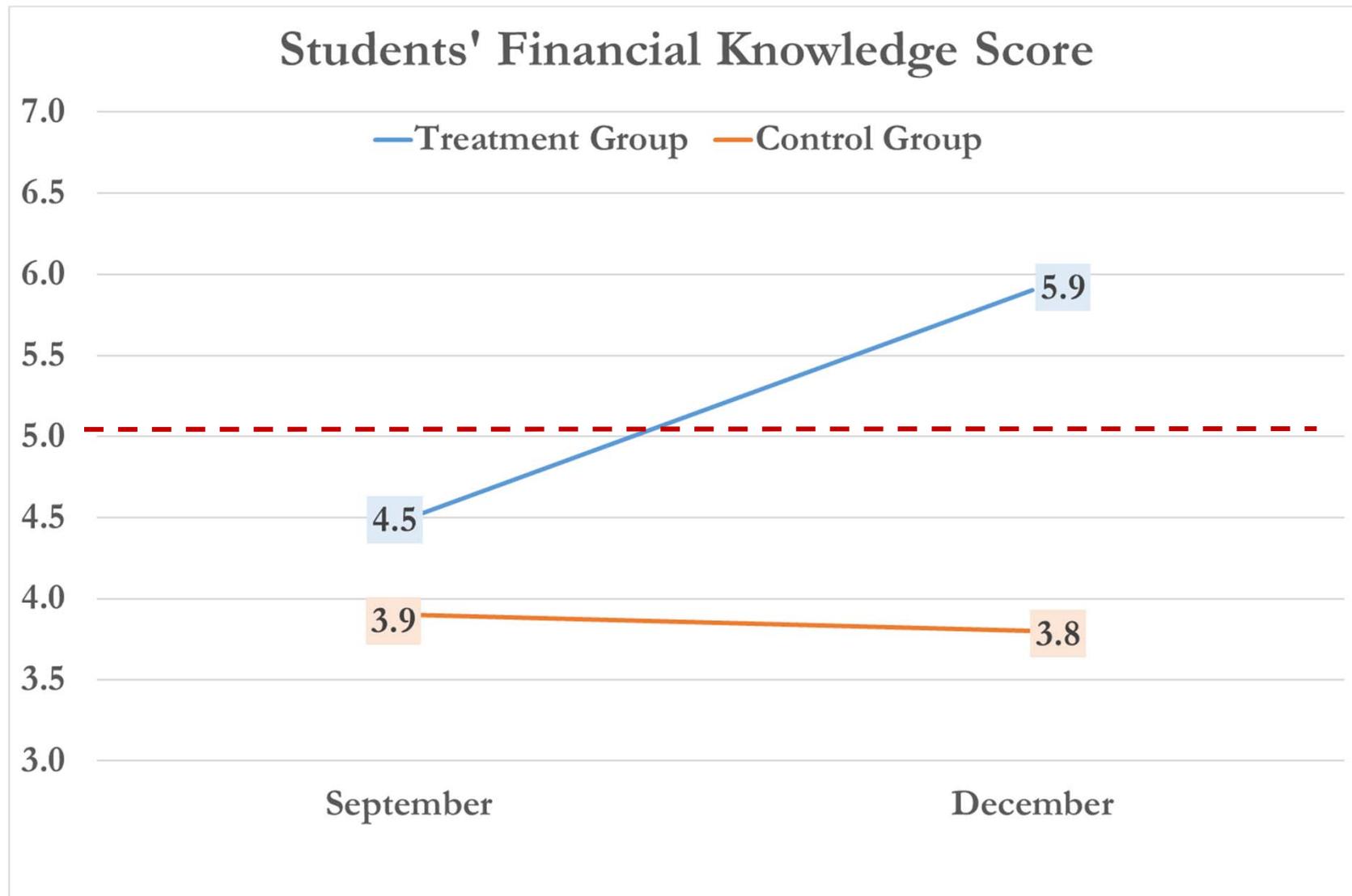
- OECD (2016): Financially Knowledgeable if at least 5 out of 7.

Results (1):
Students' Financial Knowledge (FK) scores from September to December 2020

Group	N	Final Score	Initial Score	Difference	Standard Error	p-value
All	284	4.774	4.190	0.585	0.112	0.000***
Treatment Group	134	5.910	4.515	1.396	0.144	0.000***
Control Group	150	3.760	3.900	-0.140	0.145	0.336
Treatment group						
– Low Initial Score	67	5.448	3.239	2.209	0.223	0.000***
– High Initial Score	67	6.373	5.791	0.582	0.115	0.000***

- OECD (2016): Financially Knowledgeable if at least 5 out of 7.
- Low initial knowledge if they have scored less than 5 out of 7.
- High initial knowledge group if they scored at least 5 out of 7.

Results (2):
Parents' Financial Knowledge from September to December 2020

Group	N	Final Score	Initial Score	Difference	Standard Error	p-value
Panel A						
All	135	4.660	4.674	-0.020	0.157	0.924
Treatment Group	84	4.869	4.715	0.155	0.205	0.453
Control Group	51	4.314	4.608	-0.290	0.237	0.220
Treatment group						
– Low Initial Score	33	3.364	2.606	0.758	0.426	0.085*
– High Initial Score	51	5.843	6.079	-0.24	0.178	0.194
– Home = 0	21	4.572	4.715	-0.140	0.38	0.711
– Home = 1	59	5.136	4.763	0.373	0.241	0.128
Panel B						
Treatment group & Home = 1						
– Low Initial Score	21	3.905	2.524	1.381	0.480	0.009***
– High Initial Score	38	5.816	6.000	-0.180	0.223	0.414

Results (3): OLS Regression of Students' Change in FK Scores

	(1)	(2)	(3)	(4)
S_Treat	1.847***	1.830***	1.832***	1.837***
	(0.000)	(0.000)	(0.000)	(0.000)
Initial Financial Knowledge Score	-0.507***	-0.531***	-0.536***	-0.547***
	(0.000)	(0.000)	(0.000)	(0.000)
Gender				
Female		-0.215	-0.217	-0.146
		(0.288)	(0.284)	(0.473)
Age group				
30 or greater			0.487	0.436
			(0.233)	(0.281)
Monthly Household Net Income:				
Between 900€ and 1600€				-0.385
				(0.264)
1600€ or higher				0.147
				(0.626)
Don't know				-0.237
				(0.455)
Intercept	1.836***	1.883***	1.890***	2.044***
	(0.000)	(0.000)	(0.000)	(0.000)
N	284	283	283	280
Adjusted R^2	0.348	0.348	0.347	0.354

Results (4): OLS Regression of Parents' Change in FK Scores

	(1)	(2)	(3)
P_Treat	0.618**	0.654**	0.533*
	(0.041)	(0.030)	(0.054)
Home	0.151	0.00107	-0.0383
	(0.659)	(0.997)	(0.908)
Initial Financial Knowledge Score	-0.454***	-0.526***	-0.406***
	(0.000)	(0.000)	(0.000)
Gender			
Female		-0.533*	-0.282
		(0.093)	(0.358)
Education			
University Education or Higher			0.532*
			(0.080)
Intercept	1.666***	1.906***	1.114*
	(0.003)	(0.001)	(0.054)
N	122	119	115
Adjusted R^2	0.261	0.292	0.170

Results (5): OLS Regression of Parents' Change in FK Scores (Home=1)

	Home = 1			Home = 0		
	(1)	(2)	(3)	(4)	(5)	(6)
P_Treat	0.898**	0.891**	0.702**	-0.539	-0.406	-0.380
	(0.010)	(0.011)	(0.024)	(0.146)	(0.336)	(0.436)
Initial Financial Knowledge Score	-0.535***	-0.567***	-0.422***	-0.292**	-0.448***	-0.470**
	(0.000)	(0.000)	(0.000)	(0.017)	(0.009)	(0.031)
Gender						
Female		-0.412	-0.185		-0.786	-0.679
		(0.239)	(0.602)		(0.161)	(0.260)
Education						
University Education or Higher			0.463			0.706
			(0.182)			(0.311)
Intercept	2.022***	2.000***	1.127**	1.771**	2.238***	1.928
	(0.000)	(0.000)	(0.020)	(0.010)	(0.007)	(0.116)
N	95	93	90	27	26	25
Adjusted R^2	0.327	0.335	0.184	0.122	0.151	0.092

Policy Implications

- Through financial literacy interventions in young adults, can improve financial knowledge in their immediate network.

- A potential multiplier effect is associated with a financial education intervention in these ages.

- Main beneficiaries of the multiplier effects are the generation of people in their late 40s and early 50s.

Conclusion

- Using a Financial Education (FinEd) intervention in a country with documented low levels of financial literacy we test for Financial Knowledge spillover effects.

- We measure financial knowledge using the OECD (2018) questionnaire on both a control and treatment sample of students, and their respective parents.

- We document an increase in financial knowledge for the treated group relative to the control group.

- While this increase in financial knowledge is expected given the exposure of students to the financial education material, if the new course was effective, it is important to document it, before we test for spillover effects of this increase in knowledge to the treated group's parents.

Conclusion

- We then provide evidence of a financial knowledge spillover effect onto the parents whose children are registered for this course.

- Moreover, when splitting the treated sample into parents who have high and low interaction with their children, we find that the result is driven by the subsample of high interaction between parents and children (students).

Thank you for your attention

Contact me at:

Andreas.Milidonis@ucy.ac.cy