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"FOUR BRIGHT COINS SHINING AT ME" FINANCIAL EDUCATION IN CHILDHOOD, FINANCIAL CONFIDENCE IN ADULTHOOD

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"Four Bright Coins Shining At Me" Financial Education In Childhood, Financial Confidence In Adulthood

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Abstract

We show that receiving an allowance (pocket money) between age 8 and 12 increases financial confidence in adulthood. We measure the level of confidence using the self-reported financial knowledge. We carry out the analysis by using a Dutch survey conducted in 2015. We estimate causal effects by controlling for parental attitudes and using a "within family" fixed effect.

Keywords: pocket money; financial education; financial confidence

JEL: D91; I22; J13

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1. Introduction

With the exception of (Brown & Taylor, 2016), very little has been written about the effect of allowances and pocket money during childhood on subsequent financial behavior⁴. Nevertheless, shedding light on this topic can be relevant to understand saving behavior and from a policy perspective. Indeed, research has documented both insufficient personal savings, especially for retirement (Munnell, Webb, & Golub-sass, 2007); (Crossley, Emmerson, & Leicester, 2012)), and negative effects of different financial education during childhood on income and wealth inequalities in the long-run ((Ameriks, Caplin, & Leahy, 2003); (Lusardi & Mitchell, 2016)). These factors have brought financial literacy and education in the spotlight, thus boosting research focused on financial knowledge⁵.

Financial capabilities enhance the chances of achieving financial goals, such as buying a house or other durables, as well as saving for college. However, managing wealth and not suffering from myopia in the slow accumulation process can be difficult. When the commitment is not strong enough, people tend to deviate from optimal plans. There are various ways, of course, to help people to increase their ability to commit. We investigate whether the habit of managing little money when young can have long lasting consequences in terms of building up a greater ability to cope with financial balances later on in life. More specifically, in this paper we analyze whether adults who have received an allowance during childhood (8-12-year-old) have higher level of (self-reported) financial knowledge as adults.

Aside from the studies on financial literacy, our paper is related to the literature on habit persistence in saving behavior over the lifetime and across generations. These ideas can be traced back to (Becker, 1993) and have been investigated more recently by, among the others, (Webley & Nyhus, 2006) and (Cronqvist & Siegel, 2015). Furthermore, it is worth mentioning that it has been established that children are able to use sophisticated saving strategies (Otto, Schots, Westerman, & Webley, 2006). Last but not least, this analysis takes inspiration from the literature summarized in (Heckman, Stixrud, & Urzua, 2006) and (Cunha, Heckman, & Schennach, 2010) on cognitive and non-cognitive abilities, as well as on the positive effects of early childhood education. This is particularly important for disadvantaged children (Heckman & Masterov, 2007). In this context, some scholars have started to look at the effect of finance and economic educational programs targeted to the young ((Mccormick, 2009).

The structure of the paper is the following. Section 1 motivates the research question and links it to the existing literature; section 2 describes the data we have used in the empirical analysis; section 3 discusses the empirical results and section 4 concludes and illustrates some policy implications.

⁴ More generally, (Furnham, 1999) and (Furnham, 2001) analyzed parental attitudes and children behaviors concerning allowances. Furthermore, (Holford, 2016) studied the relation between pocket money and teenagers' labor supply.

⁵ See (Crossley et al., 2012) and (Lusardi & Mitchell, 2014) for a review of the literature.

2. Data and descriptive statistics

The data for the analysis are drawn from the DHS Household Survey 2015⁶, a longitudinal survey collected every year since 1993 by the CentERdata at Tilburg University⁷, on a sponsorship by the Dutch Central Bank. The aim of this survey is to collect information about the economic and psychological determinants of saving behaviors at the individual and household level. The data set is quite rich, providing detailed information about individual characteristics, employment, pensions, living conditions, mortgages, income, assets, loans, health, economic and psychological concepts.

In 2015, 2,128 households were interviewed. This random sample is representative of the Dutch population. All household members aged 16 or more were invited to complete the questionnaire, although some sections focused only on certain individuals such as the household head. The response rate at the individual level is usually high, above 70%. Participants received a monetary compensation for filling in the questionnaire⁸.

The data contain information on whether the person received an allowance or pocket money as a child and on how individuals judged their own financial knowledge. Putting the two information

together – as we have done in the graph below - it is clear that financial confidence is higher among those who received an allowance as a child. Indeed, among the respondents who did not receive pocket money when they were young, only 22.7% deemed themselves knowledgeable or very knowledgeable, while the same figure increases to 30.1% among those who received such allowance. In the next section we will exploit different



econometric technics in order to confirm that this positive relationship is actually a causal impact of early financial education on financial literacy in adulthood.

⁶ Data were collected between April 2015 and October 2015.

⁷ A peculiarity of this survey is that data were collected using an online questionnaire. Households without a computer or access to the Internet were provided with a basic computer connected to the Internet. This computer was specifically designed for older people and individuals with low computer skills. Technical assistance was also provided by CentERdata. (Teppa & Vis, 2012) discussed the advantage and disadvantages of self-administered surveys.

⁸ Additional information about the dataset can be found in (Teppa & Vis, 2012), (CentERdata, 2015).

3. Empirical Results

3.1 Main specification

Our aim is to test whether receiving an allowance between the age of 8 and 12 increases financial literacy, measured as self-reported financial knowledge, later in life. In our dataset, respondents were asked to measure how knowledgeable they consider themselves with respect to financial matters using a scale ranging from 1 to 4. Given the logical ordering of this dependent variable, we can use an order probit model⁹. The estimated coefficients are reported in the first column of Table 1, while the subsequent columns contain the marginal effects on financial knowledge for the four reported confidence levels.

One of the (usual) concerns is about the endogeneity of our key regressor. First, it should be pointed out that such allowance was received during childhood, so it is unlikely to be correlated with other covariates which affect financial literacy among adults. For instance, financial knowledge may be affected by government interventions or macroeconomic shocks. Nevertheless, these factors are not correlated with whether or not the respondent received pocket money while he or she was a child. Therefore, these omissions do not lead to biased estimates. Second, we have included several socio-demographic controls in the regression: gender, age¹⁰, education, working and marital status, household composition¹¹, and income¹². The effect of receiving an allowance remains statistically significant. Most important, we have controlled for parental attitudes and family background by adding an indicator variable equal to one if the respondent's (grand)parents taught him or her how to manage a little budget when she was between age 12 and 16. This variable should thus capture the cultural environment in which the person grew up. This should tackle the issue of omitted variables which may affect financial knowledge and be correlated with allowance.

Our main result is that if an individual used to receive an allowance¹³, he or she is more confident on financial issues in adulthood. In particular, this regressor decreases the probability that an individual will consider herself "not knowledgeable" (Level 1) or "more or less knowledgeable" (Level 2) by 1-3 percentage points, while it increases the probability that such individual will answer "knowledgeable" (Level 3) or "very knowledgeable" (Level 4) by around 1-3 percentage points.

⁹ We have also estimated an order logit models. Results are qualitatively very similar. For the sake of completeness, we have also estimated a linear model. The OLS coefficient of allowance is 0.08 and it is significant, thus supporting the conclusions from the nonlinear models. Tables for this and the subsequent results are available upon request if not reported.

¹⁰ There is no evidence that the impact of age is nonlinear since if we add age squared as regressor its coefficient is not statistically significant.

¹¹ Using number of household members instead of number of children in the household does not substantially change the results.

¹² Adding also whether the individual owns a house does not substantially change the results. A detailed description of these controls, as well as their summary statistics, is included in the Appendix.

¹³ We constructed this indicator variable equal to one if the individual reported always receiving the allowance as a child or if she received the allowance, but sometimes her parents forgot about it. We assigned zero when the respondent reported not receiving any allowance or receiving it occasionally. Around 54% of the individuals in the relevant sample reported receiving an allowance.

Among the other regressors, it is interesting to note that female respondents are less likely to report high levels of financial knowledge¹⁴. Furthermore, parenting during adolescence seems to play an important role, too. Indeed, individuals tend to have higher levels of financial knowledge if their parents or grandparents taught them some money management techniques. The order of magnitude is also rather large, comparable to the one of tertiary education.

¹⁴ We have also tried to add an interaction term between allowance and gender: the coefficient is significant at a 10-percent level and negative.

	0				
	(1)	(2)	(3)	(4)	(5)
	Coeff	Level 1	Level 2	Level 3	Level 4
Allowance	0.118^{**}	-0.028**	-0.011**	0.030^{**}	0.009^{**}
	(0.055)	(0.013)	(0.005)	(0.014)	(0.004)
Female	-0.321***	0.076^{***}	0.029^{***}	-0.080***	-0.025***
	(0.052)	(0.012)	(0.006)	(0.013)	(0.005)
Age	-0.003	0.001	0.000	-0.001	-0.000
	(0.002)	(0.001)	(0.000)	(0.001)	(0.000)
Tertiary education	0.216^{***}	-0.051***	-0.020***	0.054^{***}	0.017^{***}
-	(0.054)	(0.013)	(0.005)	(0.013)	(0.005)
Log(Individual Gross Income)	0.039^{***}	-0.009***	-0.004***	0.010^{***}	0.003^{***}
-	(0.011)	(0.002)	(0.001)	(0.003)	(0.001)
Working	-0.027	0.006	0.002	-0.007	-0.002
-	(0.065)	(0.015)	(0.006)	(0.016)	(0.005)
Parents taught budgeting	0.196***	-0.046***	-0.018***	0.049***	0.015***
	(0.066)	(0.016)	(0.006)	(0.016)	(0.005)
Married	0.147^{**}	-0.035**	-0.013**	0.037^{**}	0.012^{**}
	(0.059)	(0.014)	(0.006)	(0.015)	(0.005)
Number of children in the HH	-0.008	0.002	0.001	-0.002	-0.001
	(0.028)	(0.007)	(0.003)	(0.007)	(0.002)
Threshold 1	-0.466**				
	(0.197)				
Threshold 2	1.136***				
	(0.197)				
Threshold 3	2.406^{***}				
	(0.203)				
Regional dummies	Yes	Yes	Yes	Yes	Yes
Observations	2014	2014	2014	2014	2014

Table 1: Estimated Coefficients - 4 Categories - Order Probit

Standard errors in parentheses. Clustered SE at household level.

Source: DHS 2015

The first column reports the estimated coefficients from the order probit

The reported marginal effects are divided into four columns:

The Level 1 refers to the probability of reporting 'Not Knowlegeable'

The Level 2 refers to the probability of reporting 'More or less knowledgeable'

The Level 3 refers to the probability of reporting 'Knowledgeable'

The Level 4 refers to the probability of reporting 'Very Knowledgeable'

* p < 0.10, ** p < 0.05, *** p < 0.01

3.2 Sensitivity analysis

Since our relevant regressor is time-invariant, we cannot exploit the panel dimension of DHS by estimating an individual and time fixed-effects (FE) model. However, the part of the survey on economic and psychological concepts is asked to more than one individual per household. Therefore, as a robustness check, we can focus on the household head and the spouse and use the variation within the household, i.e. we can add a fixed-effect to capture all common factors between these two individuals. In other words, we can use a first-difference estimator and verify whether different levels of financial literacy within the couple are due to different financial education during childhood. The idea behind this approach is that since there is assortative matching in the marriage market (Verbakel & Kalmijn, 2014), husband and wife (or two partners living together) share several individual characteristics which may affect financial literacy. Using this FE model allows us to control for these unobservable components.

The estimated coefficient from a FE linear probability model are reported in Table 2¹⁵. Having received an allowance increases the probability of reporting some knowledge in financial matters by more than 10 percentage point¹⁶. This effect is statistically significant and similar to the impact of allowance on the latent variable in the order probit model.

Furthermore, we have also estimated a linear FE model with the 4-level categorical variable. As shown in the second column of Table 2, the coefficient of allowance is qualitatively similar to our previous estimates, thus supporting the above conclusions.

¹⁵ By construction, we have used in this specification a sample of individuals who are either the household head or the partner. For comparison, we have also tried to estimate a simple order probit as in the previous paragraphs by using the same sample as the FE model and by adding an indicator equal to one if the individual is the household head. Results do not change substantially.

¹⁶ We have used as dependent variable an indicator equal to one if the respondent reported some positive level of knowledge on financial matters, zero otherwise. The estimated results from the conditional FE logit model are also qualitatively similar.

	(1)	(2)
	2 Categories -	4 Categories -
	Linear FE	Linear FE
Allowance	0.1024^{**}	0.1921**
	(0.0476)	(0.0816)
Female	-0.0835^{*}	-0.1296
	(0.0458)	(0.0918)
Age	-0.0070	-0.0211
	(0.0067)	(0.0145)
Tertiary education	0.0429	0.1709^{*}
	(0.0572)	(0.0988)
Log(Individual Gross Income)	0.0005	0.0187
	(0.0068)	(0.0125)
Working	-0.0726	-0.1947*
	(0.0542)	(0.1005)
Parents taught budgeting	-0.0100	-0.0232
	(0.0591)	(0.0943)
Household head	0.0566	0.1886^{**}
	(0.0421)	(0.0856)
Constant	1.2018^{***}	3.0575***
	(0.4067)	(0.8518)
Observations	1953	1953
WithinR ²	0.07457	0.14179
OverallR ²	0.01340	0.02964
Average obs per ind	1.23	1.23

 Table 2: Estimated Coefficients for the within-household fixed-effect model

Standard errors in parentheses. Clustered SE at household level. Source: DHS 2015 ${}^{*}p < 0.10$, ${}^{**}p < 0.05$, ${}^{***}p < 0.01$

4. Concluding remarks

This study enriches the literature of financial literacy and awareness by looking at childhood financial habits. We provide sound evidence of a positive effect of receiving an allowance during childhood on the level of financial literacy as adult. Children who are used to receive an allowance are also more knowledgeable in adulthood. This is particularly important from a policy perspective since financial literacy has been proven to have important implications on many financial decisions. More financial literate households are less vulnerable to under-saving and therefore are better equipped for retirement. In fact, they tend to have more substantial retirement savings and to participate more intensively in the stock market (see, for instance, (van Rooij, Lusardi, & Alessie, 2011)). In this context, our study suggests a simple and inexpensive way to increase financial literacy, thus somewhat counteracting researchers who argued that financial education is costly and with limited benefits¹⁷.

Further research is encouraged to investigate whether receiving an allowance during childhood affects educational achievements - specifically math knowledge and abilities - as well as financial decisions later in life. In particular, it may be interesting to investigate whether such pocket money may have a heterogeneous impact on different outcomes (than financial knowledge) across gender.

¹⁷ See for instance (Willis, 2011) and (Fernandes, Lynch Jr, & Netemeyer, 2014).

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Appendix

A1. Summary statistics – All respondents

Variable	Obs	Mean	SD	Min	Max
Financial Knowledge	2,677	2.131	0.730	1	4
Allowance	2,676	0.546	0.498	0	1
Female	5,137	0.508	0.500	0	1
Age	5,130	43.309	23.322	0	96
Tertiary education	5,137	0.264	0.441	0	1
Log(Individual Gross Income)	2,098	9.314	2.880	0	12.627
Working	5,137	0.230	0.421	0	1
Parents taught budgeting	2,676	0.774	0.419	0	1
Number of children in the household	5,133	1.147	1.241	0	6
Married	5,137	0.359	0.480	0	1
Household Head	3,651	0.583	0.493	0	1

Freq.	Percent	Cum.
462	17.26	17.26
1,499	56	73.25
618	23.09	96.34
98	3.66	100
2,677	100	
	Freq. 462 1,499 618 98 2,677	Freq.Percent46217.261,4995661823.09983.662,677100

Allowance	Freq.	Percent	Cum.
0	1,216	45.44	45.44
1	1,460	54.56	100
Total	2,676	100	

Variable	Obs	Mean	SD	Min	Max
Financial Knowledge	2,014	2.162	0.734	1	4
Allowance	2,014	0.541	0.498	0	1
Female	2,014	0.461	0.499	0	1
Age	2,014	55.479	15.983	17	92
Tertiary education	2,014	0.364	0.481	0	1
Log(Individual Gross Income)	2,014	9.336	2.861	0	12.627
Working	2,014	0.446	0.497	0	1
Parents taught budgeting	2,014	0.783	0.413	0	1
Number of children in the household	2,014	0.686	1.054	0	6
Married	2,014	0.724	0.447	0	1

A2. Summary statistics – Order probit sample (Table 1 Column 1)

Financial			
knowledge	Freq.	Percent	Cum.
1	330	16.39	16.39
2	1,104	54.82	71.2
3	504	25.02	96.23
4	76	3.77	100
Total	2,014	100	

Allowance	Freq.	Percent	Cum.
0	925	45.93	45.93
1	1,089	54.07	100
Total	2,014	100	

A2. Variable description

Financial confidence. The original question from which the different dependent variables used in the empirical section has been derived is the following:

How knowledgeable do you consider yourself with respect to financial matters?

- 1. Not knowledgeable
- 2. More or less knowledgeable
- 3. Knowledgeable
- 4. Very knowledgeable

Allowance. The original question from which the key regressor used in the empirical section has been derived is the following:

When you were between 8 and 12 years of age, did you receive an allowance from your parents then? By allowance we mean a fixed amount received on a regular basis.

- 1. yes
- 2. yes, but it was sometimes forgotten
- 3. occasionally
- 4. no

The distribution of the answers across this spectrum for the whole sample is reported in the next table. Note that this question was not asked to all individuals.

Allowance	Freq.	Percent	Cum.
Yes	1,266	24.64	24.64
Yes, but it was sometimes forgotten	194	3.78	28.42
Occasionally	332	6.46	34.88
No	884	17.21	52.09
Missing	2,461	47.91	100
Total	5,137	100	

Female is an indicator variable equal to one if the respondent was a female individual, zero if the respondent was a male one.

Age has been computed subtracting the year of birth of the respondent from 2015.

Tertiary education is an indicator variable equal to one if the respondent completed a university education (Wetenschappelijk onderwijs) or an advanced vocational training (HBO eerste of tweede fase), zero otherwise.

Individual gross income is an aggregate variable directly computed by CentERdata starting from the different income components provided by the respondents. The technical details are discussed

in (CentERdata, 2015). We have taken the logarithm of this income variable. If the income was originally zero, also this variable was set to zero.

Working is an indicator variable equal to one if the primary occupation of the respondent was a paid job, zero otherwise. Primary occupation is defined as the most time-consuming one. Paid work includes: work at one's own expense or risk, work in the family business (own, or business of spouse or parents), employed on a contractual basis, sheltered workshop, in training at a company or institution (receiving wage or salary), trainee/apprentice (receiving wage or salary).

Parents taught budgeting. Respondents were asked whether their parents or grandparents try to teach them how to budget when they were between 12 and 16 years of age. This variable was set equal to one if they answer "Yes, they gave me advice and practical help", "Yes, they gave me some advice and practical help", "Yes, but to a certain extent"; zero if their reply was "No".

Number of children in the household is a numerical variable counting the number of children who were living in the household at the time of the survey.

Married is an indicator variable equal to one if the respondent's marital status was "married", "registered partnership", or "living together with partner (not married)"; zero if the declared marital status was "divorced". "widowed", or "never married".

Household Head is an indicator variable equal to one if the respondent declared that his/her position in the family was the household head.

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