CeRP
CENTER FOR RESEARCH ON PENSIONS AND WELFARE POLICIES

Working Paper 169/17

GENDER DIFFERENCES IN FINANCIAL EDUCATION: EVIDENCE FROM PRIMARY SCHOOL

Flavia Coda Moscarola
Matteo Migheli

April 2017

Gender Differences in Financial Education: Evidence from Primary School

Abstract

Today, financial and economic education is a primary issue in academia and among policy makers, and there is great interest towards programmes that are able to boost it. In this paper, we test whether a programme ("treatment") of financial education on savings, targeted to children aged 8 and 9 is effective and to what extent. We measure the interest rate required by the children before and after the treatment to accept postponing a reward, computing its variation and comparing this with that of a control group. We find evidence that the overall initiative is helpful in decreasing the level of impatience of children and the number of inconsistent choices of boys. Our findings invite to reflect on the gender neutrality of programmes of financial education.

Keywords: children; financial and economic literacy; savings; field study

JEL codes: A20; C93; G02

1. Introduction

Educating people on making conscious decisions about their money is recognised as an important policy objective, with potentially high gains in terms of individual and collective welfare (Lusardi and Mitchell, 2014). Today people increasingly need to provide for themselves with coverage for the main risky events that occur over the course of their life. Financial investments and insurance decisions directly relate to saving plans and the mismanagement of indebtedness – which is a form of negative saving – has been one of the determinants of the recent world economic crisis. Therefore, mastering basic economic and financial notions becomes essential (Bucker-Koenen et al., 2016).

Savings cover a central role in economic and financial literacy programmes that have been implemented in various countries. According to the standard microeconomic theory (Strulik, 2009), savings depend on the opportunity cost of money (i.e. the market interest rate) and the individual's patience. In general, literacy on economic and financial matters increases the awareness of the individuals and stimulates them to be forward-looking, which, in turn, decreases their impatience (Simon et al., 2015 and Becker and Mulligan, 1997). Patience is a positive characteristic when it comes to economic behaviours and performances. Indeed, more patient individuals have better outcomes in the job market (DellaVigna and Paserman, 2005 and Munasinghe and Sicherman, 2006); take up pension programmes earlier (Fang and Silverman, 2006), have higher credit scores, are less likely to default on their loans (Meier and Sprenger, 2007) and make decisions that are better for the economic development of their country, compared to those made by impatient individuals (Bauer and Chytilová, 2013). Along the same lines, more patient children are found to expend more effort studying and attain higher educational levels than do the others (Mischel, 1989), save more (Carlin and Robinson, 2012), and more often opt for healthy habits (Sutter et al., 2013).

In our study, we contribute to the literature on financial and economic education by testing the effectiveness of an easy-to-be-implemented programme of economics of savings addressed to children aged 8-9.

For this scope, we ask children to make a series of intertemporal choices and we measure their level of patience together with the level of consistency of their answers. This last aspect is *per se* very relevant as it is a premise for rational financial decision-making (Campbell et al., 2011). We implement a well-established programme of economics of saving developed by the **** (*** henceforth), and we investigate its effectiveness and the gender differences in learning and behaving. The *** programme involves a one-hour laboratory accompanied by a short explanation of what saving means and for what savings may be used. This workshop was implemented by the *** several times. Its repeated use and its brevity render it particularly suitable for the aims of our research, since they minimise the variability between the different sessions. Moreover, it is a programme of financial literacy for young children, which is easy to hand out to many subjects at a much reduced cost.

We observed pupils before and after the treatment. Their revealed level of impatience decreases with the repetition of the game, but it is only weakly affected by the treatment. With respect to the level of consistency in the pupils' answers, we observe a quite high initial level; for boys only, this level furtherly increases as a joint effect of both the repetition of the game and the treatment. This last evidence, which certainly deserves better investigation, might suggest the need for a differential approach in teaching elements of finance to boys and girls.

The remainder of the article is organised as follows: section 2 presents the related literature, section 3 describes the study design and procedure, section 4 provides the descriptive statistics, section 5 presents the results, section 6 shows the main robustness checks (others are in Appendix D) and section 7 concludes.

2. Related literature

The relevance of economic and financial literacy in economics literature has grown during the last years. A number of articles deal with its effect on individuals' financial decisions (van Rooij et al., 2011), retirement choices (Lusardi and Mitchell, 2007 and van Rooij et al., 2012), participation to mutual and pension funds, and so forth. This literature shows that financial literacy generally helps people to invest their savings and to make their retirement decisions in a more conscious way than individuals without any financial literacy. The major questions, however, are: when – in the life of an individual – should financial education start? Should it be treated as a "traditional" subject similar to grammar, mathematics, or geography, or should it be taught in parallel extra-curricular courses?

Evidence shows that children are able to handle basic economic concepts well. Boshara and Emmons (2015) and Drever et al. (2015) highlighted that the foundations of financial knowledge are actually built during childhood. Indeed, several works provide empirical evidence on economic issues through studies with children (Holt, 1999; Bucciol et al., 2011; Bucciol and Piovesan, 2011), and children as young as 5 or 6 have proven to be reliable study subjects (Roos et al., 2005; Chan and McNeal, 2006 and Leiser and Halachmi, 2006). Otto et al. (2006) showed that children between 6 and 9 are already able to understand what saving is about and to allocate their money to savings programmes. Furthermore, children and teenagers are often savers and sometimes workers, and, as such, they must decide how to manage their savings and take elementary economic decisions. These further reasons support the idea that young people should receive financial education very early in their lives.

From the US (Fox et al., 2005) to the 27 members of the EU (Habschick et al., 2007), governments, central banks and other primary financial institutions and authorities have designed and implemented programmes of financial literacy targeted to primary and secondary schools. Strategies for educating the young (especially children) are still controversial and diverse: the effectiveness of

many of these programmes has been empirically tested, but has not always emerged (Fox et al., 2005; McCormick, 2009, Kubasu and Ayuo, 2014 and Moon et al., 2014). In particular, the literature does not offer clear evidence in favour of extra-curricular versus curricular courses, although most of the programmes implemented were extra-curricular. Moreover, there is experimental evidence supporting the idea that the effectiveness of courses is independent of their length (Brugiavini et al., 2015).

In what follows, we present a short overview of some of the main findings regarding programmes focused on children. Gross et al. (2005), for the US, and Romagnoli and Trifilidis (2013), for Italy, clearly point out that well-structured financial literacy courses can really improve the financial knowledge of undergraduate students. Batty et al. (2015), for Wyoming (USA) and Alan and Ertac (2014), for Turkey, found similar results using pupils from 3rd to 5th grade in elementary schools and provided evidence of a long-lasting effect from economic and financial literacy courses. Carlin and Robinson (2012) found that US students, who participated in a 19-hour financial literacy curricular course, saved more, repaid debts faster and relied less on credit than did peers who did not attend the same programme. Becchetti et al. (2013) for Italy showed that financial education in high schools increases the propensity of the students to gather information about economic issues by reading economic articles in newspapers. Lührmann et al. (2015) observed that German students involved in financial literacy programmes are less impulsive in their purchasing choices.

Lührmann et al. (2015) documented also strong gender differences in the attitudes and behaviours of teen-agers involved in the programmes: boys were more interested in finance and showed higher levels of financial literacy and propensity to save than girls did. The existence of gender differences in financial knowledge and in the approach to financial investments is a well-known issue. On average, women participate less in financial markets, are less financial literate and less confident in their abilities when it comes to financial issues (Bucher-Koenen et al., 2016). In addition men and women show up different investment strategies (Powell and Ansic, 1997; Graham et al., 2002 and

Hira and Loibl, 2008), probably because of the differential attitude towards risks (Croson and Gneezy,2009 highlighted that women are generally more risk averse than men) or because they are less prone to competition (Migheli, 2014). A major issue in this domain is whether gender differences are a matter of nature or of nurture. In other words, genetic factors – but also (or alternatively) how women are educated and socialised – may explain these differences. With particular reference to financial literacy, Fonseca et al. (2012) suggested that the cause relates more to how literacy is produced than to intrinsic (genetic) differences between the genders. Bucher-Koenen et al. (2016) instead stressed education and the specialisation of roles inside the household. However, neither study detected significant evidence in favour of these conjectures. Thus, a specific investigation in this sense becomes highly relevant to understand which characteristics of financial literacy programmes are responsible for these gender-specific outcomes and to which extent.

Our study focuses on a programme regarding the economics of savings that does not only provide children with basic notions in economics and finance, but measures and affects also their level of patience. Indeed, time preferences mirror patience and are fundamental "in theories of savings and investment, economic growth, interest rate determination and asset pricing, addiction, […]"(Becker and Mulligan, 1997, p.729). Also the psychological literature has documented how the ability of children to refrain from immediate gratification predicts education outcomes later in life (Mischel et al., 1989). In addition, Bettinger and Slonim (2007) found that boys between 5 and 16 are more impatient than are girls, that mathematical scores at school are not predictors of patience and that children's choices are consistent with hyperbolic discount (as for adults, see Andersen et al., 2008).

Our study contributes to this literature, as we not only measure the impatience level of children, but we add evidence about the effectiveness of teaching the importance of savings to primary school children. In addition, we highlight whether this teaching has different outcomes between boys and girls. To accomplish this goal, we conduct our research in a metropolitan area of North-western Italy and we adopt a quasi-experimental approach as, following Falk and Heckman (2009), we

believe that (especially) with children, the provision of real incentives is likely to improve the reliability of the results compared to a setting where no incentive is provided.

3. Study design and procedure

As already anticipated, the aim of the paper is to test the effectiveness of an economic and financial education programme designed to teach pupils the importance of savings. The test is performed in the field on a sample of pupils from the third and fourth year (i.e. children aged between 8 and 9) of five primary schools in **** and **** (a town immediately close to ****). We selected the schools randomly and we contacted the headmasters via telephone to explain the purposes of the research and to ask the permission to administer the questionnaires and the treatment to the pupils. Once the headmaster had accepted, s/he chose the class for the study. While this procedure was not completely random (the director of a school may have chosen the best class to provide a good impression of the school), the pupils were not informed about the aims of the study and the procedure was the same for all of the schools involved. Given the age of the subjects, we chose to base the survey on the strategy method (Selten, 1967), instead of using PCs in a lab. Andersen et al. (2006) showed that, in spite of some flaws, this method produces robust findings about individuals' discount rates. Our procedure is very close to Andersen et al.'s (2008), but their subjects are adults, their time horizon is longer (six months in their case, one in ours) and we did not test pupils' risk aversion.

We structured our test in four phases. In the first phase, we asked the pupils to answer a basic socio-demographic questionnaire at home, with the help of their parents. In the second phase, carried out in class, the subjects were involved in a game (thereafter game-P) that was aimed at measuring their patience level. The game-P consists of completing the questions reported in table A1 (see Appendix A). The first choice asks whether the subjects prefer 10 candies the day after (choice A) or 11

candies in one month[1] (choice B). The next choices are identical, but the pay-off for the wait gradually increases up to 20 candies. As is standard in this type of experimental game (see, for example, Bahry and Wilson, 2006 for an application and Brandts and Charness, 2011 for a survey), the subjects receive the table and then complete all the rows, before giving it back to the experimenters. The switching point – that is, the row at which the subject changes its preference between choice A and choice B – gives information about the individual's level of patience[2]. We used it as a proxy for the intertemporal discount rate of the child. The discount rates implied by the game are very high compared to the reality, but this is common in works of this sort as the time between two phases of such studies is usually limited (see, for instance, Andersen et al., 2008, where the annualised interest rates of the game are clearly out-of-market). To provide pupils with an incentive to spend effort, at the end of the game, one of the experimenters draws a number from 1 to 10 from an urn. This identifies the "winning row" that corresponds to a possible outcome that is actually paid.

The third phase, which took place one week later, consists of what we call the "treatment". Conceived by the ***, it is a one-hour laboratory procedure aimed at making the children familiar with the idea and the utility of saving. First, pupils were requested to draw something they would desire to have on paper. This wish could be a material good (a car, a musical instrument, a new pair of shoes, etc.), a pet (dog, cat, horse, etc.) or something else that is purchasable in the market (for example, a dance course or a travel experience). This mental exercise is part of the programme of financial education: indeed, extant research shows that children, who are stimulated to imagine their future, become more patient in intertemporal choice tasks (Becker and Mulligan, 1997). Adults involved in supervising the laboratory strictly avoided any potential influence on the pupils' desires.

[1] The researchers used some examples to clearly demonstrate to the pupils the awareness of what waiting for one month means.

[2] Pupils see all options in table 1 and can freely switch back from B to A. This procedure allows us to check for the time-consistency of their choices and enriches the outcomes of our research.

After the drawings were completed (it took about 15 minutes), the children were seated in front of a board, and one of the researchers invited them, through some examples, to meditate on the amount of money that they would need to realise their dreams. In particular, the children were shown that, most of the time, their weekly pocket money is insufficient to buy what they want immediately. However, they can gather the necessary sum by saving these weekly amounts for a certain period.

To reinforce the concept, they an additional game was introduced. The children were given a picture of some material good (a photo camera, a bike, a dollhouse, a video game), reporting the market price below. Then, they received a sort of calendar and a researcher gave a replica of a 5-euro banknote to each of them. This amount was insufficient to buy any of the goods represented in the pictures. The researchers showed them that they needed to receive other banknotes before being able to buy the good in the pictures. The children were then invited to put the first banknote received in the first cell of the calendar. Then, a second banknote was given to them and they were asked to put it in the second cell of the calendar and so on, until each of them had enough money to buy the good in the picture. Each banknote represented their weekly pocket money, while the number of filled cells in the calendar represented the number of weeks they had to save their pocket money, before being able to buy the good in the picture.

In phase four, carried out in the laboratory of the *** immediately after phase three, the children played the game-P again. Not all of the pupils went through all the four phases. A group of them were not involved in phase three, but simply played the game-P two times, a week apart, in class. The comparison between the two groups allows for isolating the “treatment effect”, that is the effect of the *** laboratory, from that due to the repetition of the game (“learning effect”). The game-P itself is likely to increase the financial literacy of the children, as they face a choice that involves a reward for their patience. At the end, we asked the pupils to state how much they liked candies on a 1 to 10 scale. The reason for asking this was that the subjects might have different predilections for candies, and these differences may have affected their responses during the game. We tested

whether the predilections for candies followed different distributions between treated and non-treated. A Mann–Whitney test confirms that the two subsamples are drawn from the same population; moreover, a t-test reveals that the mean levels of predilection are not statistically different between the two subsamples. Therefore, any difference in preferences for candies between the children does not alter the results.

The same (male and female) researchers implemented all parts of the experiment. The division of tasks in the implementation was the same for all the repetitions; therefore, although the gender of the researcher may influence the subjects, any such effect is constant across subjects.

4. Descriptive statistics

Our initiative involved 173 children attending the third and fourth grades of a sample of five primary schools of **** and ****. In the analysis, we excluded pupils who were absent in one of the two games, did not provide answers to the games or (whose parents) did not fill the socio-demographic questionnaire. Indeed, our sample counts 165 pupils that participated twice in the game proposed, 117 in the group of the treated, and 48 in the control one.

The information from the socio-demographic questionnaire helps us to sketch the main characteristics of the group of pupils involved in our experiment (descriptive statistics are reported in table 1 for the overall sample and then for the treated and for the control groups separately). The sample shows a quite balanced gender composition: 52% boys and 48% girls. The education of the parents is in line with what observed for the general Italian population: 29% of fathers and 38% of mothers have a university degree, while about 43% of parents have a high school diploma. About 42% of pupils have older siblings and slightly more (50%) have younger. The average math grade is 8 over 10 and the provision of weekly/monthly allowance is not very widespread among Italian families. Only 31% of pupils received a weekly/monthly allowance from their parents, while about 76% have own savings.

The last column of table 1 provides the t-test results for the differences between the mean values of these variables across groups. Randomisation successfully balanced subjects' characteristics between the different groups, except for the education of parents, the weekly allowance and the savings. This evidence required the adoption of a difference-in-differences approach in our analysis.

Appendix B presents the preferences revealed in each round of the game. We synthetized the choices of each pupil in each row of the table of game-P in a string of 10 characters, e.g. AAAAAAAAAA, BBBBBBBBBB, ABBBBBBBBB, and so forth. We considered the choices as consistent when the pupil always selected A, or always B or started with A and then switched to B only once (strict criterion). These kinds of patterns reveal that the pupil starts preferring either a non-delayed payment (A) or a delayed payment (B), and then does not change her preferences as the interest rate increases, or switches from non-delayed to delayed payment when the interest rate is high enough to compensate her for waiting. Moreover, choices are considered consistent when we observed, at most, one switching point and the individual never switches from B to A. Examples of inconsistent choices are ABABABABAB, AAAABBBBAB and BBAAAAAAAA. The interpretation of these patterns in literature is controversial (see Andersen et al. 2006). Multiple switching points can either identify indifference between the alternatives or signal the fact that the subjects did not understand the rationale behind the game. We have a proclivity for this last interpretation and we classify these multiple switching choices as inconsistent. We present a sensitivity analysis for this assumption in section 6.

[TABLE 1 ABOUT HERE]

The incidence of inconsistent choices at time 0 is 22%, in line with the 25% that Bettinger and Slonim (2006) found; this figure does not differ substantially across genders; however, it is higher in the control group than among the treated (additional element that convinced us to opt for the difference-in-differences approach).

[TABLE 2 ABOUT HERE]

However, a striking gender difference emerges in game-P at T=1 (see table 2): for male pupils, inconsistent choices halve, for females they actually increase, shifting from 22% to 27%.

At T=0, the median impatience level is very high (5 for both genders, see table 3); that is where the median pupil asks for at least 5 additional candies – with respect to the initial 10 – to accept postponing the reward for about one month. At T=1, however, it decreases to 4 for girls and to 3 for boys. The average impatience level in T=0 is 4.49 for girls and 5.18 for males, and in T=1, becomes 4.33 and 3.97, respectively. The reduction in the average impatience level is statistically significant (at the 10% level) for boys only.

[TABLE 3 ABOUT HERE]

5. Results

The data collected through the games are analysed using a difference-in-differences methodology. This is standard in econometrics and in public policy evaluation, but is rarely used with experimental data. For this reason, we provide the reader with a full explanation of this model in Appendix C.

We first looked at the effect of the programme on the levels of patience of the pupils who provided consistent responses according to the strict criterion illustrated in section 2. Our dependent variable is the impatience score of pupils at T=0 and at T=1, that is the number of choices A in game-P before the child switched to option B. A negative sign of the estimated coefficients reveals that the correspondent regressor reduces the pupil's level of impatience. Difference-in-differences regressions are run on the original balanced panel, excluding three outlier observations,[3] presenting very high leverage.

[3] The outliers are three observations of the control group with a variation in the impatience level between T=0 and T=1 (number of choices A) greater than 3, top 10% of the distribution. They have very high dfbeta values (i.e. they have a very high leverage), greater than 0.28 when the cut-off value for dfbetas in our analysis is $\frac{2}{\sqrt{222}} = 0.134$. The results, including the outliers, are presented in Appendix D.

We started with the simplest specification (see table 4, column (i)) and we regressed the impatience score on the time dummy (T), the group dummy that identifies the treated group (G) and the treatment dummy (D=T*G). The time dummy captures the learning effect due to the repetition of the game. The group dummy detects the systematic differences between the control and the treated groups. The treatment dummy identifies the effectiveness of the *** laboratory. We found evidence of a substantial initial difference between the treated and the non-treated groups: being in the treated group means an impatience score of 5.179 points lower on average. The learning effect and the treatment effect are not significant when considered singularly, but show a positive and significant joint effect (see the test H0: [T+D]=0 in table 4). This evidence suggests overall the programme has an impact in reducing the impatience of children.

Then, we ran other specifications with a richer set of explanatory variables: we added gender of the pupil, education of her parents, presence of younger and/or older siblings, the pupil's math grade, whether she receives a weekly allowance and whether she has own savings. These socio-demographic characteristics appear to correlate with being in the treated group and their introduction improves the significance level of some key regressors. In particular, the learning effect captured by the dummy time is now negative and significant (at the 10% level)[4] also if considered separately from the treatment effect; this suggests that the repetition of the game-P induces pupils to be more patient (the impact on their impatience level is about -0.444 points). The group effect becomes -6.152, while the treatment *per se* does not appear to be effective at reducing the impatience level (the coefficient of the dummy is negative but not significantly different from zero at any conventional statistical level). The overall joint effect of the treatment and the repetition of the game remains significant.

[4] While the significance level is not very high, we consider the result strong enough to be presented with some emphasis, for at least two reasons. First, the sample size is not very large, and therefore a 10% level of significance is not negligible. Second, as we stressed in the previous sections, the programme under consideration is very short, and represents a lower-bound benchmark for similar programmes studied elsewhere in the literature.

In specifications (iii) and (iv) of table 4, we allow for gender-specific effects. We interacted the time, the group and the treatment dummies with the gender and we found that, while for girls the treatment and repetition effects remain non-significant (either taken singularly or jointly), for boys they are both negative and significantly different from zero. According to our estimates, our initiative reduces the impatience score of males by about one point, and about 70% of such an effect is attributable to the *** laboratory (the coefficients of the "Time (T)*male" and of the "Treatment effect (D)*male" are respectively -0.364 and -0.836). However, the effects for boys and girls cannot be considered statistically different.

The fixed effect estimation proposed in specification (iv) prevents estimated coefficients of the random effect to be biased in case of correlation with the unobserved time invariant component of the error term. As evident by comparing columns (iii) and (iv) of table 4, the fixed-effect model produces the same coefficients and similar standard errors as the individual random-effect, signalling that the within- and between-effects in our sample are orthogonal and any relevant endogeneity issue is detected[5].

Interestingly, regressions (ii) and (iii) disclose an important role of the educational and economic levels of the household. Pupils with highly educated fathers and with their own savings are, on average, more impatient. In addition, specification (iii) highlights a systematic difference in the impatience levels across genders (captured by the coefficient of the dummy male), with boys more impatient than girls *ceteris paribus*

We then investigated the effects of the treatment on the consistency of the choices. The dependent variable is a dummy variable equal to one if the child provides an inconsistent response (multiple switching points between A and B or switching from B to A) in game-P, either at time 0 or 1. In our first specification, we estimate a difference-in–differences random effect probit model using the time trend, the group dummy and the interaction between the time and the group as regressors (see

[5] Similar results are also found when running a fixed-effect regression on specification (iii) of table 4. These last results are available upon request.

table 5, specification (i)). As before, the three variables capture the learning effect due to the repetition of the game, the initial differences between treated and control groups and the treatment effect respectively. We find a significant and negative group effect (coefficient -0.695, average marginal effect -0.134) and a significant and negative treatment effect (coefficient -0.453, average marginal effect -0.087) but no significant learning effect. However, overall the learning effect and the treatment effect are jointly significant at 10 per cent level (captured by the test H0: T+D=0, see the bottom lines of table 5).

In specification (ii) in table 5 we add some additional explanatory variables. The treatment effect appears to be stronger. The probability of an inconsistent response decreases about 13 percentage points when children attend the *** laboratory. However, the repetition of the game-P now appears to affect the consistency of the choices negatively, suggesting a possible decrease in the attention/interest of pupils in the game.

If we interact the time, the group and the treatment dummies with gender (table 5, specification (iii)), we find evidence that boys learn from the repetition of the game and from the treatment more than girls. The sums of the time and treatment dummies are statistically different between girls and boys at the 1 per cent level. In particular, for the boys the coefficients for the time and treatment dummies are jointly significant (see the test H0: [T+D]=0 in table 5) and the marginal effects are equal to -0.049 and -0.195 respectively. The treatment effect is also statistically significant *per se* at the 10 per cent level. For the girls the marginal effects are 0.151 and - 0.114 but statistically non-significant at standard levels.

Specifications (ii) and (iii) also reveal a higher incidence of inconsistent responses among children with low math grades, with a highly educated father or who receive a weekly allowance. Instead, the education of the mother is positively correlated with consistent answers.

The above mentioned gender gap is confirmed also in the fixed effect linear probability model specification reported in column (iv). This same specification confirms also that the combined

effect of the laboratory and the repetition of the game is effective in reducing the boys' impatience (see the test H0: [T+D]*male=[T+D]*female at the bottom of table 5).

6. Robustness check

Thus far, we have adopted a restrictive criterion to select the sample to use for analysing the effect of the treatment on impatience levels. As a robustness check, we replicate the analysis by using looser criteria. As a first alternative, we interpret inconsistent choices – i.e. switching from A to B many times - as situations of indifference between A and B and we rationalise them, adopting the following rules: a) if the individual picks A(B) in the first row and A(B) in the last row, we assume that she means A(B) for all rows; b) if the individual chooses A in the first row and B in the last, we consider as valid the last switch observed; c) if the individual picks B in the first row and A in the last, we omit it from the regressions (eight observations omitted).

[TABLE 6 APPROXIMATELY HERE]

The results are presented in table 6. In this new set of regressions, the treatment effect for males is bigger in absolute terms compared to before (-1.578 versus -0.836) and is statistically more significant (see models (iii) and (iv)). As for females, the treatment turns out to have a significant positive effect on the level of impatience (the coefficient becomes 2.136 versus 0.371 and it is now statistically significant at the 10% level). The gender differences in the separate and joint effects of the repetition of the game and the treatment are statistically significant at 5 percent statistical level. Overall, we find evidence that boys and girls are both able to learn financial basics from simple programmes, but that their learning patterns differ. This also emerges in table 4, but the evidence is statistically less robust. Indeed, results in table 6 highlight that, on the one hand, the repetition of the game increases the girls' patience (for girls the coefficient of the time dummy is -2), but has the

opposite effects on the boys' (for boys the coefficient of the time dummy is 0.412); on the other hand, the treatment has a positive effect on the boys' patience and a negative effect on the girls' (the coefficients are -1.578 for boys and 2.136 for girls). However, the two effects perfectly offset each other in the case of girls, while the treatment effect is larger than the learning effect in the case of boys, so that we observe a net decrease in the boys' impatience and no effect on the girls'.

As a second option to relax the selection criteria to identify consistent answers, we adopt a set of even looser rules: a) if the individual chooses A(B) in the first row and A(B) in the last row, we assume that she means A(B) for all rows; b) if the individual picks A(B) in the first row and B(A) in the last row, we assume that she means A(B) for all rows if she opts in the majority of the occasions for A and that she means B otherwise.

[TABLE 7 APPROXIMATELY HERE]

As can be observed in table 7, results from table 6 are confirmed and the effect of the treatment is further improved both in its absolute value and in its statistical significance. Moreover, a more pronounced gender effect emerges.

The robustness checks show that the estimates presented in section 5 are very conservative, as the effects presented there are weaker and smaller than those obtained in the robustness checks. This helps to support the internal validity of our results. We would like to stress that the estimations presented in this section are not mutually exclusive. They serve to show the sensitivity of the results to different possible procedures used for coding the pupils' answers. However, when such procedures are involved (and needed), some arbitrariness is unavoidable. Table 4 and table 7 adopt strict and loose criteria respectively, while those used to produce the results presented in table 6 stay somehow "in the middle". For the sake of conservativeness and objectiveness we show the results obtained by applying the strictest criteria in the main result section of the paper; however, we think that the figures shown in table 6 may be an adequate and reasonable representation of the outcomes of our experiment. Indeed, we would like to point out that, given the sample size and the short

duration of the programme, the use of too strict criteria to code the variable of interest may lead to underestimate the effects of the laboratory.

7. Conclusions

The original idea of this work was to test whether children can learn from a simple and short extra-scholastic financial literacy initiative focussed on savings. The treatment we analyse differs substantially from those generally assessed by the literature for at least two reasons. First, it is not an out-and-out course; rather, it is a one-hour activity aimed at familiarising the children with the concept of "savings". Second, it is administered in a non-institutional framework (i.e. not between the walls of a school). Nevertheless, it is important to assess its effectiveness for a number of different reasons. First, it is a form of financial literacy that can be easily administered to children. Second, it is a short extra-curricular activity, and therefore it might meet the parents' appreciation more easily than can longer activities. Third, given its structure and duration, it may reach a large number of beneficiaries at small cost. Fourth, if effective, it could stimulate the children's and their parents' interest for further education on the topic. Of course, a one-hour activity may have limited effects on the children's literacy, but will also reveal how sensitive and receptive they are with respect to this kind of subject. To answer our research question, we ran a field experiment on students from the third and fourth grades of elementary school. We submitted to children a set of intertemporal choices before and after a laboratory on the importance of saving, organised by the ***. We tested the effect of the initiative on the children' levels of patience and the consistency of their choices.

We found evidence that the treatment *per se* only weakly affects the impatience level of children but the repetition of the game and the treatment are jointly effective in decreasing it. Boys appear to learn more than girls. Participation in the programme reduces the impatience of boys by about one point on a scale between 1 and 10. The observed gender difference is not robust to all the criteria

used to identify the consistency of the responses given, however the gender gap emerges in the most of the estimations presented. The initiative is also observed to be effective in decreasing the inconsistency of the answers, but for boys only (the treatment decreases for boys the probability of providing an inconsistent response of about 19 percentage points). This result is robust to different specifications and to different selection criteria. Overall, the differences in learning paths evidenced in the paper seem to suggest that the programmes of financial literacy should either be differentiated between genders or restructured to be effective on both males and females.

Further research shall investigate more this gender difference. In particular, a promising field of research is linked to language. Boggio et al. (2014) document that the language used by financial advisors and financial advertising mostly pertains to the male domains. Thus, as language affects the psychological and emotional spheres of a person, women can be less attracted by the world of finance because of the language used. The research on this topic is still in its infancy, but in a recent experiment, Boggio and Coda Moscarola (2016) found evidence that gender-specific language improves females' consistency when facing intertemporal problems.

An additional promising line of research stresses instead the role of the gender of people involved in the realisation of economic and financial education programmes. Indeed, Croson and Gneezy (2009) provide evidence that the gender of the people who are interacting in a group influences group participants' decisions. However, simple interventions (i.e. single courses) in the field of financial literacy may be not enough, as also financial knowledge depreciates over time (Fernades et al., 2014). For this reason, both the introduction of finance as a compulsory course in the secondary school and periodic courses for adult people may be helpful to keep the level of financial literacy adequate within the population.

References

- Alan, Sule and Seda Ertac (2014). "Good Things Come to Those Who (Are Taught How To) Wait: Results from a Randomized Educational Intervention on Time Preference" unpublished. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2566405.

- Angrist Joshua D. and Pischke Jörn-Steffen (2009), Mostly Harmless Econometrics: An Empiricist's Companion, Princeton University Press .

- Andersen, Steffen, Glenn W. Harrison, Morten I. Lau and E. Elisabet Rutström (2006). "Elicitation Using Multiple Price List Formats" *Experimental Economics*, 9(4): 383–405.

- Andersen, Steffen, Glenn W. Harrison, Morten I. Lau and E. Elisabet Rutström (2008). "Eliciting Risk and Time Preferences" *Econometrica*, 76(3): 583–618.

- Athey, Susan and Guido W. Imbens (2006), "Identification and Inference in Nonlinear Difference in Difference Models". *Econometrica*, 74(2): 431–497

- Batty, Michael, J. Michael Collins and Elizabeth Odders-White (2015). "Experimental Evidence on the Effects of Financial Education of Elementary School Students' Knowledge, Behavior and Attitudes" *Journal of Consumer Affairs*, 49(1): 69–96.

- Bauer Michal, Julie Chytilová (2013). "Women, children and patience: experimental evidence from Indian villages" Review of Development Economics, 17 (4), 662-675.

- Becchetti, Leonardo, Stefano Caiazza and Decio Coviello (2013). "Financial Education and Investment Attitudes in High Schools: Evidence from a Randomized Study" *Applied Financial Economics*, 23(10): 817–836.

- Becker, Gary S. and Casey B. Mulligan (1997). "The Endogenous Determination of Time Preference" *The Quarterly Journal of Economics*, 112(3): 729–758.

- Bettinger, Eric and Robert Slonim (2007). "Patience Among Children" *Journal of Public Economics*, 91(1–2): 343–363.
- Boggio, Cecilia and Flavia Coda Moscarola (2016)."What is Good for the Goose is Good for the Gander? An Experiment on Gender, Language and Financial Market Participation", *CeRP Working Paper* forthcoming
- Boggio, Cecilia, Elsa Fornero, Henriette Prast and Jose Sanders (2014). "Seven Ways to Knit Your Portfolio: Is Investor Communication Neutral?" *CeRP Working Paper* n. 140/14.
- Boshara, Ray and William R. Emmons (2015). "A Balance Sheet Perspective on Financial Success: Why Starting Early Matters" *Journal of Consumer Affairs*, 49(1): 267–298.
- Brugiavini, Agar; Danilo Cavapozzi, Mario Padula and Yuri Pettinicchi (2015). "Financial Education, Literacy and Investment Attitudes" *NETSPAR Academic Series* DP-06/2015-014.
- Bucciol, Alessandro, Daniel Houser and Marco Piovesan (2011). "Temptation and Productivity: a Field Study with Children" *Journal of Economic Behavior & Organization*, 78(1–2): 126–136.
- Bucciol, Alessandro and Marco Piovesan (2011). "Luck or Cheating? A Field Study on Honesty with Children" *Journal of Economic Psychology*, 32(1): 73–78.
- Bucher-Koenen, Tabea, Annamaria Lusardi, Rob J. M. Alessie and Marteen C. J. van Rooij (2016). "How Financially Literate Are Women? An Overview and New Insights" *Journal of Consumer Affairs*, forthcoming doi:10.1111/joca.12121
- Campbell, John Y., Howell E. Jackson, Brigitte C. Madrian and Peter Tufano (2011). "Consumer Financial Protection" *Journal of Economic Perspectives*, 25(1): 91–113.
- Carlin, Bruce I. and David T. Robinson (2012). "What Does Financial Literacy Training Teach Us?" *Journal of Economic Education*, 43(3): 235–247.

- Chan, Kara and James U. McNeal (2006). “Chinese Children’s Understanding of Commercial Communications: a Comparison of Cognitive Development and Social Learning Models” *Journal of Economic Psychology*, 27(1): 36–56.

- Croson, Rachel and Uri Gneezy (2009). “Gender Differences in Preferences” *Journal of Economic Literature*, 47(2): 448–474.

- DellaVigna, Stefano and M. Daniele Paserman (2005). "Job Search and Impatience," *Journal of Labor Economics*, 23(3): 527-588.

- Drever, Anita I., Elizabeth Odders-White, Charles W. Kalish, Nicole M. Else-Quest, Emily M. Hoagland and Emory N. Nelms (2015). “Foundations of Financial Well-Being: Insights into the Role of Executive Function, Financial Socialization, and Experience-Based Learning in Childhood and Youth”, *Journal of Consumer Affairs*, 49(1): 13–38.

- Falk, Armin and James J. Heckman (2009). “Lab Experiments Are a Major Source of Knowledge in the Social Sciences” *Science*, 326(5952): 535–538.

- Fang, Hanming and Dan, Silverman (2006), “Distinguishing between Cognitive Biases: Belief vs. Time Discounting in Welfare Program Participation,” in Joel Slemrod and Edward McCaffery eds., *Behavioral Public Finance: An Agenda*, New York: Russell Sage Foundation, 2006, pp. 47–81.

- Fernandes Daniel, John G. Lynch Jr., Richard G. Netemeyer (2014) “Financial Literacy, Financial Education, and Downstream Financial Behaviors” *Management Science*, 60(8):1861-1883

- Fonseca, Raquel, Kathleen J. Mullen, Gema Zamarro and Julie Zissimopoulos (2012). “What Explains the Gender Gap in Financial Literacy? The Role of Household Decision Making” *Journal of Consumer Affairs*, 46(1): 90–106.

- Fox, Jonathan, Suzanne Bartholomae and Jinkook Lee (2005). “Building the Case for Financial Education” *Journal of Consumer Affairs*, 39(1): 195–214.

- Graham, Judy F., Edward J. Stendardi, Joan K. Myers and Mark J. Graham (2002). "Gender Differences in Investment Strategies: an Information Processing Perspective" *Journal of Bank Marketing*, 20(1): 17–26.

- Gross, Karen, Joanne Ingham and Richard Matasar (2005). "Strong Palliative, but not a Panacea: Results of an Study Teaching Students about Financial Literacy" *Journal of Student Financial Aid*, 35(2): 7–26.

- Habschick, Marco, Britta Seidl and Jan Evers (2007). *Survey of Financial Literacy Schemes in the EU27*, Hamburg: Evers Jung Consulting.

- Hira, Tahira K. and Cäzilia Loibl (2008). "Gender Differences in Investment Behavior" in *Handbook of Consumer Finance Research* (Jing J. Xian Ed.), Amsterdam: Springer.

- Holt, Charles A. (1999). "Teaching Economics with Classroom Studies: a Symposium" *Southern Economic Journal*, 65(3): 603–610.

- Kubasu, Alex and Amos Ayuo (2014). "The Role of Financial Literacy in Promoting Children and Youth Savings Accounts: a Case of Commercial in Kenya" *Research Journal of Finance and Accounting*, 5(11): 106–110.

- Leiser, David and Reut B. Halachmi (2006). "Children's Understanding of Market Forces" *Journal of Economic Psychology*, 27(1): 6–19.

- Lührmann, Melanie, Marta Serra-Garcia and Joachim Winter (2015). "Teaching Teenagers in Finance: Does It Work?" *Journal of Banking & Finance*, 54: 160–174.

- Lusardi, Annamaria and Olivia S. Mitchell (2007). "Baby Boomer Retirement Security: the Roles of Planning, Financial Literacy and Housing Wealth" *Journal of Monetary Economics*, 54(1): 205–224.

- Lusardi, Annamaria and Olivia S. Mitchell (2014). “The Economic Importance of Financial Literacy: Theory and Evidence” *Journal of Economic Literature*, 52(1), 5–44

- McCormick, Martha H. (2009). “The Effectiveness of Youth Financial Education: a Review of the Literature” *Journal of Financial Counseling and Planning*, 20(1): 70–83.

- Meier Stephan and Charles Sprenger (2007). “Selection into Financial Literacy Programs: Evidence from a Field Study”, FRB of Boston Public Policy Discussion Paper No. 07–5

- Migheli, Matteo (2014). “Preferences for Government Intervention in the Economy: Does Gender Matter?” *International Review of Law and Economics*, 39: 39–48.

- Mischel W., Y. Shoda, M. Rodriguez (1989). “Delay of Gratification in Children” *Science*, 244: 933–938

- Moon, Chung-S., Kyungyoung Ohk and Chul Choi (2014). “Gender Differences in Financial Literacy among Chinese University Students and the Influential Factors” *Asian Women*, 30(2): 3–25.

- Munasinghe, Lalith, Sicherman Nachum (2006). "Why Do Dancers Smoke? Smoking, Time Preference, and Wage Dynamics," *Eastern Economic Journal*, 32(4): 595-616.

- Otto, Annette M.C., Paul A.M. Schots, Joris A.J. Westerman and Paul Webley (2006). “Children’s Use of Saving Strategies: an Experimental Approach” *Journal of Economic Psychology*, 27(1): 57–72.

- Powell, Melanie and David Ansic (1997). “Gender Differences in Risk Behaviour in Financial Decision Making: an Experimental Analysis” *Journal of Economic Psychology*, 18(6): 605–628.

- Puhani Patrick .A. (2012), “The Treatment Effect, the Cross Difference, and the Interaction Term in Nonlinear “Difference-in-Difference” Models” *Economics Letters*, 115(1): 85–87.

- Romagnoli, Angela and Maurizio Trifilidis (2013). "Does Financial Education at School Work? Evidence from Italy" Banca d'Italia Occasional Paper no. 155.

- Roos, V. P. Chiroro, C. van Coppenhagen, I. Smith, E. van Heerden, R.E. Abdoola, K. Robertson and C. Beukes (2005). "Money and Adventures: Introducing Economic Concepts to Preschool Children in the South African Context" *Journal of Economic Psychology*, 26(2): 243–254.

- Selten, Reinhard (1967). "Die Strategiemethode zur Erforschung des eingeschränkt rationalen Verhaltens im Rahmen eines Oligopolstudys". In H. Sauermann (Ed.), *Beiträge zur studyellen Wirtschaftsforschung* (Vol. I, pp. 136–168). Tübingen: Mohr.

- Simon, Curtis J., John T. Warner and Saul Pleeter (2015). "Discounting, Cognition and Financial Awareness: New Evidence from a Change in the Military Retirement System" *Economic Inquiry*, 53(1): 318–334.

- Strulik Holger (2009). "Patience and Prosperity", *Journal of Economic Theory*, 147(1)

- Sutter, Matthias, Martin G. Kocher, Daniela Glätzle-Rützler and Stefan T. Trautmann (2013). "Impatience and Uncertainty: Experimental Decision Predicts Adolescents' Field Behavior" *The American Economic Review*¸ 103(1): 510–531.

- Van Rooij, Maarten, Annamaria Lusardi and Rob Alessie (2011). "Financial Literacy and Stock Market Participation" *Journal of Financial Economics*, 101(2): 449–472.

Van Rooij, Maarten, Annamaria Lusardi and Rob Alessie (2012). "Financial Literacy, Retirement Planning and Household Wealth" *The Economic Journal*, 122(560): 449–478.

TABLES

Table 1 – Descriptive statistics, T=0

	Overall sample			Treated group			Control group			T-test diff=0
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	P-values
Male	165	0.521	0.501	117	0.496	0.502	48	0.583	0.498	0.309
Father education: High school	159	0.447	0.499	113	0.416	0.495	46	0.522	0.505	0.226
Father education: University	159	0.289	0.455	113	0.407	0.493	46	0.000	0.000	0.000
Mother education: High school	160	0.431	0.497	114	0.386	0.489	46	0.543	0.504	0.069
Mother education: University	160	0.381	0.487	114	0.491	0.502	46	0.109	0.315	0.000
Older siblings (Yes/No)	158	0.424	0.579	112	0.446	0.598	46	0.370	0.532	0.450
Younger siblings (Yes/No)	155	0.497	0.793	111	0.477	0.819	44	0.545	0.730	0.632
Math grade	151	8.311	0.888	109	8.294	0.864	42	8.357	0.958	0.695
Weekly allowance (Yes/No)	152	0.309	0.464	108	0.370	0.485	44	0.159	0.370	0.010
Savings (Yes/No)	151	0.762	0.428	106	0.868	0.340	45	0.511	0.506	0.000
Inconsistent choices (Yes/No)										
All	165	0.218	0.414	117	0.179	0.385	48	0.313	0.468	0.061
Males	86	0.221	0.417							
Females	79	0.215	0.414							

Note: We synthetized the choices of each pupil in each row of the table of game-P (see Appendixes A and B) in a string of 10 characters, e.g. AAAAAAAAAA, BBBBBBBBBB, ABBBBBBBBB, and so forth. We considered the choices as consistent when the pupil always selected A, or always B or started with A and then switched to B (strict criterion). All the variables, but Math grade, are dummies; yes is coded as 1, no as 0.

Table 2 – Consistency of answers in game-P at T=0 and at T=1

	Game-P at T=1							
	Males				***Females***			
	Consistent	Inconsistent	Total		Consistent	Inconsistent	Total	
Game-P at t=0			N	%			N	%
Consistent	65	2	67	*78*	49	13	62	*78*
Inconsistent	12	7	19	*22*	9	8	17	*22*
Total (count)	77	9	86		58	21	79	
Total %	*90*	*10*		*100*	*73*	*27*		*100*

Note: We synthetized the choices of each pupil in each row of the table of game-P (see Appendixes A and B) in a string of 10 characters, e.g. AAAAAAAAAA, BBBBBBBBBB, ABBBBBBBBB, and so forth. We considered the choices as consistent when the pupil always selected A, or always B or started with A and then switched to B only once (strict criterion).

Table 3 – Impatience levels of children in game-P in t=0 and in t=1

	Game-P in t=0		**Game-P in t=1**	
	Female	Males	Female	Males
Mean	4.49	5.18	4.33	3.97
Median	5	5	4	3
Standard deviation	4.21	4.33	4.00	4.07
N	49	65	49	65
T-test (P-values) $Mean_1 - Mean_0 = 0$	0.84	0.10		

Note: Balanced panel of consistent choices according to the strict criterion (see Appendix B). Impatience level is measured as the number of additional candies – with respect to the initial 10 – to accept postponing the reward for about one month, i.e. switch from A to B in game-P (see Appendixes A and B).

Table 4 – Effect of the treatment on the impatience level – Dependent variable: impatience score

	(i) Random-effect GLS regression b/se	(ii) Random-effect GLS regression b/se	(iii) Random-effect GLS regression b/se	(iv) Fixed-effect regression b/se
Time (T)	-0.500	-0.444*		
	(0.346)	(0.261)		
Group (G)	-5.179***	-6.152***		
	(1.285)	(1.517)		
Treatment effect (D=T*G)	-0.174	-0.356		
	(0.445)	(0.403)		
Time (T)*male			-0.364**	-0.364**
			(0.157)	(0.152)
Time (T)*female			-0.571	-0.571
			(0.549)	(0.530)
Group (G)*male			-6.293***	
			(1.347)	
Group (G)*female			-5.967***	
			(1.797)	
Treatment effect (D)*male			-0.836*	-0.836°
			(0.471)	(0.455)
Treatment effect (D)*female			0.371	0.371
			(0.717)	(0.693)
Male		0.557	1.200**	
		(0.785)	(0.506)	
Father education: High school		1.138**	1.187***	
		(0.479)	(0.417)	
Father education: University		1.536*	1.532*	
		(0.805)	(0.799)	
Mother education: High school		0.736	0.687	
		(0.589)	(0.620)	
Mother education: University		0.436	0.442	
		(0.672)	(0.706)	
Older siblings (Yes/No)		-0.324	-0.346	
		(0.366)	(0.367)	
Younger siblings (Yes/No)		-0.409	-0.424	
		(0.385)	(0.397)	
Math grade		-0.294	-0.309	
		(0.586)	(0.590)	
Weekly allowance (Yes/No)		-0.165	-0.136	
		(0.672)	(0.699)	
Savings (Yes/No)		1.340**	1.339**	
		(0.553)	(0.538)	
Constant	8.955***	9.531**	9.297*	4.613***
	(0.585)	(4.745)	(4.746)	(0.122)
Sigma u	2.925	2.685	2.700	3.715
Sigma e	2.124	2.290	2.293	2.293
Rho (fraction of variance due to u_i)	0.655	0.579	0.581	0.724
R-squared	0.260	0.330	0.335	0.029
N	222	186	186	186
Tests (P-values):				
T+D=0	0.0160	0.0092		
[T+D]*male=0			0.0069	0.0267
[T+D]*female=0			0.6651	0.6677
T*male=T*female			0.5960	0.6003
D*male= D*female			0.1237	0.1551
[T + D]*male= [T + D]*female			0.1412	0.1716

Note: Balanced panel of consistent choices according to the strict criterion (see Appendix B), excluding 3 outliers Error terms clustered at class level. Standard errors in parentheses. Significance levels: *** p <0.01, ** p <0.05, * p <0.10, °p= 0.109.

Table 5 – The effect of the treatment on the inconsistency of the responses

	(i) Random-effect Probit		(ii) Random-effect Probit		(iii) Random-effect Probit		(iv) Fixed-effect LPM
	b/se	mfx	b/se	mfx	b/se	mfx	b/se
Time (T)	0.084	0.0162	0.344*	0.0673*			
	(0.140)	(0.0272)	(0.183)	(0.0359)			
Group (G)	-0.695***	-0.134***	-0.519*	-0.102*			
	(0.268)	(0.0375)	(0.293)	(0.0538)			
Treatment effect (D)	-0.453*	-0.0872*	-0.665**	-0.130**			
	(0.258)	(0.0464)	(0.334)	(0.0633)			
Time (T)*male					-0.269	-0.0487	-0.080
					(0.444)	(0.0786)	(0.058)
Time (T)*female					0.837	0.151	0.150
					(0.749)	(0.131)	(0.202)
Group (G)*male					-0.774***	-0.140***	
					(0.263)	(0.0423)	
Group (G)*female					-0.437	-0.0791	
					(0.423)	(0.0731)	
Treatment effect (D)*male					-1.079*	-0.195*	-0.058
					(0.649)	(0.114)	(0.061)
Treatment effect (D)*female					-0.628	-0.114	-0.133
					(0.820)	(0.145)	(0.212)
Male			-0.614***	-0.120***	0.158	0.0285	
			(0.220)	(0.0440)	(0.123)	(0.0227)	
Father education: High school			0.211	0.0412	0.268	0.0485	
			(0.331)	(0.0646)	(0.308)	(0.0546)	
Father education: University			0.394	0.0771	0.485	0.0877*	
			(0.285)	(0.0545)	(0.295)	(0.0510)	
Mother education: High school			-0.202	-0.0395	-0.220	-0.0398	
			(0.258)	(0.0497)	(0.268)	(0.0469)	
Mother education: University			-0.592**	-0.116**	-0.679**	-0.123**	
			(0.300)	(0.0538)	(0.338)	(0.0570)	
Older siblings (Yes/No)			-0.177	-0.0346	-0.228	-0.0412	
			(0.320)	(0.0632)	(0.306)	(0.0553)	
Younger siblings (Yes/No)			-0.229	-0.0448	-0.270	-0.0489	
			(0.190)	(0.0393)	(0.227)	(0.0429)	
Math grade			-0.313***	-0.0613***	-0.343***	-0.0620***	
			(0.111)	(0.0211)	(0.121)	(0.0203)	
Weekly allowance (Yes/No)			1.027***	0.201***	1.124***	0.203***	
			(0.245)	(0.0544)	(0.247)	(0.0517)	
Savings (Yes/No)			-0.169	-0.0330	-0.184	-0.0332	
			(0.143)	(0.0295)	(0.172)	(0.0321)	
Constant	-0.604***		2.257**		2.136*		0.222***
	(0.133)		(1.107)		(1.105)		(0.015)
lnsig2u_cons	-0.009		-0.561		-0.240		
	(0.000)		(0.000)		(0.000)		
R-squared adj.							0.036
N	324		272		272		324

Note: Balanced panel of consistent choices according to the strict criterion (see Appendix B), excluding three outliers. Error terms clustered at class level. Standard errors in parentheses. Significance levels: *** p <0.01, ** p <0.05, * p <0.10.

Table 5 (continued) – The effect of the treatment on the inconsistency of the responses

	(i) Random-effect Probit		(ii) Random-effect Probit		(iii) Random-effect Probit		(iv) Fixed-effect LPM
	b/se	mfx	b/se	mfx	b/se	Mfx	b/se
Test (P-values):							
T+D=0	0.0889		0.2088				
[T+D]*male=0					0.0096		0.0001
[T+D]*female=0					0.5289		0.8042
T*male=T*female					0.3538		0.4057
D*male= D*female					0.7163		0.7868
[T+D]*male=[T+D]*female					0.0013		0.0409

Note: Balanced panel of consistent choices according to the strict criterion (see Appendix B), excluding three outliers. Error terms clustered at class level. Standard errors in parentheses. Significance levels: *** p <0.01, ** p <0.05, * p <0.10.

Table 6 – Effect of the treatment on the impatience level – Robustness check I, first loose criterion

	(i) Random-effect GLS regression b/se	(ii) Random-effect GLS regression b/se	(iii) Random-effect GLS regression b/se	(iv) Fixed-effect regression b/se
Time (T)	-0.844***	-0.829***		
	(0.020)	(0.321)		
Group (G)	-4.098***	-4.993***		
	(1.091)	(1.431)		
Treatment effect (D=T*G)	0.340	0.247		
	(0.362)	(0.511)		
Time (T)*male			0.412***	0.412***
			(0.043)	(0.042)
Time (T)*female			-2.000*	-2.000*
			(1.040)	(1.016)
Group (G)*male			-4.656***	
			(1.070)	
Group (G)*female			-5.381***	
			(1.849)	
Treatment effect (D)*male			-1.578***	-1.578**
			(0.549)	(0.536)
Treatment effect (D)*female			2.136*	2.136*
			(1.095)	(1.070)
Male		-0.017	-0.385	
		(0.766)	(0.381)	
Father education: High school		0.705	0.802*	
		(0.537)	(0.490)	
Father education: University		1.539	1.531	
		(1.134)	(1.140)	
Mother education: High school		0.616	0.594	
		(0.590)	(0.611)	
Mother education: University		-0.012	0.019	
		(0.684)	(0.678)	
Older siblings (Yes/No)		-0.745	-0.792	
		(0.488)	(0.508)	
Younger siblings (Yes/No)		-0.711**	-0.712**	
		(0.344)	(0.356)	
Math grade		-0.286	-0.296	
		(0.340)	(0.350)	
Weekly allowance (Yes/No)		-0.004	-0.002	
		(0.779)	(0.778)	
Savings (Yes/No)		0.578**	0.615**	
		(0.280)	(0.264)	
Constant	8.133***	10.334***	10.558***	5.068***
	(0.369)	(2.995)	(3.091)	(0.158)
R-squared	0.184	0.252	0.265	0.009
N	316	266	266	266
Tests (P-value)				
T+D=0	0.1623	0.1436		
[T+D]*male=0			0.0331	0.0655
[T+D]*female=0			0.6920	0.6972
T*male=T*female			0.0259	0.0566
D*male= D*female			0.0018	0.0150
[T+D]*male=[T+D]*female			0.0074	0.0288

Note: Balanced panel of consistent choices according to the first loose criterion to define consistency (see section 6) excluding: three outliers, and observations related to individuals that answer B in the first row and A in the last. Error terms clustered at class level. Standard errors in parentheses. Significance levels: *** p <0.01, ** p <0.05, * p <0.10.

Table 7 – Effect of the treatment on the impatience level – Robustness check II, second loose criterion

	(i) Random-effect GLS regression b/se	(ii) Random-effect GLS regression b/se	(iii) Random-effect GLS regression b/se	(iv) Fixed-effect regression b/se
Time (T)	-0.933***	-0.943**		
	(0.083)	(0.447)		
Group (G)	-3.798***	-4.498***		
	(1.189)	(1.376)		
Treatment effect (D=T*G)	0.626	0.527		
	(0.411)	(0.596)		
Time (T)*male			0.353**	0.353*
			(0.173)	(0.169)
Time (T)*female			-2.167**	-2.167*
			(1.097)	(1.072)
Group (G)*male			-4.953***	
			(1.149)	
Group (G)*female			-4.154**	
			(1.703)	
Treatment effect (D)*male			-1.408**	-1.408**
			(0.596)	(0.583)
Treatment effect (D)*female			2.486**	2.486*
			(1.151)	(1.125)
Male		-0.193	0.611	
		(0.921)	(0.572)	
Father education: High school		0.783	1.007**	
		(0.621)	(0.512)	
Father education: University		1.406	1.424	
		(1.251)	(1.222)	
Mother education: High school		0.242	0.189	
		(0.364)	(0.466)	
Mother education: University		-0.609	-0.538	
		(0.585)	(0.540)	
Older siblings (Yes/No)		-0.853*	-0.952*	
		(0.510)	(0.537)	
Younger siblings (Yes/No)		-0.765**	-0.773**	
		(0.345)	(0.379)	
Math grade		-0.309	-0.336	
		(0.340)	(0.360)	
Weekly allowance (Yes/No)		0.490	0.474	
		(0.739)	(0.736)	
Savings (Yes/No)		0.882***	0.955***	
		(0.294)	(0.159)	
Constant	7.978***	10.382***	10.136***	5.103***
	(0.692)	(3.018)	(3.026)	(0.169)
R-squared	0.132	0.196	0.225	0.012
N	324	272	272	272
Tests (P-value)				
T+D=0	0.4442	0.2920		
[T+D]*male=0			0.0643	0.1002
[T+D]*female=0			0.3605	0.3806
T*male=T*female			0.0064	0.0269
D*male= D*female			0.0002	0.0070
[T+D]*male=[T+D]*female			0.0072	0.0286

Note: Balanced panel of consistent choices According to the second loose criterion to define consistency, excluding three outliers. Error terms clustered at class level. Standard errors in parentheses. Significance levels: *** p <0.01, ** p <0.05, * p <0.10.

Appendices

Appendix A: Game-P form

Table A1 – Game-P

	Option A	**Option B**	**ANSWER**
	You receive … candies tomorrow	You receive … candies in 1 month	Do you prefer A or B?
Row 1	10 candies	11 candies	
Row 2	10 candies	12 candies	
Row 3	10 candies	13 candies	
Row 4	10 candies	14 candies	
Row 5	10 candies	15 candies	
Row 6	10 candies	16 candies	
Row 7	10 candies	17 candies	
Row 8	10 candies	18 candies	
Row 9	10 candies	19 candies	
Row 10	10 candies	20 candies	

Appendix B: Descriptive statistics – strict criterion to define consistency/inconsistency

Table B1 – Game-P at T=0 – Inconsistent choices

Choices in Game-P at T=0	Frequency
AAAAAABAAA	2
AAAAAABAAB	1
AAAAABAABA	1
AAAAABBABA	1
AAAABAAAAB	1
AAAABAABBA	1
AAAABBABAB	1
AAAABBBAAB	1
AAABBABBAB	1
AAABBABBBB	1
AABAABBBAB	1
AABABAABBB	1
AABBAAAAAA	1
AABBBABBBB	1
AABBBBAAAA	1
ABABAAABBB	1
ABABABABAB	2
ABBAAABBAA	1
ABBABAAABB	1
ABBBAABBBB	1
ABBBBBBABA	1
BAAAAAAAAB	2
BAAAABBBBB	1
BAABBBBBAB	1
BABAABBBBB	1
BABABBBABB	1
BABBBAABAB	1
BABBBBBBBB	1
BBAABBAABB	1
BBBAAABABB	1
BBBABBAAAA	1
BBBABBBABB	1
BBBBBBBAAB	1
With some missing	7
Total	43

Note: One observation has some missing in both game 1 and game 2

Table B2 – Game-P at T=0 – Consistent choices

Choices in Game-P at T=0	Frequency
AAAAAAAAAA	30
AAAAAAAAAB	23
AAAAAAAABB	4
AAAAAAABBB	6
AAAAAABBBB	4
AAAAABBBBB	8
AAAABBBBBB	4
AAABBBBBBB	5
ABBBBBBBBB	1
BBBBBBBBBB	45
Total	130

Table B3 – Game-P at T=1 – Inconsistent choices

Choices in Game-P at T=1	Frequency
AAAAAABABB	1
AAAAAABBAB	1
AAAAABAAAB	1
AAABAABBAB	1
AABAAABAAB	2
AABAABBABB	1
AABABBABAA	1
AABBAABBAB	1
ABAAABABBB	1
ABAABAABBB	1
ABABAAABBA	1
ABABABABAB	7
ABBBBBBBAA	2
BAAAAAAABA	1
BAAAAABAAA	1
BAAAABBAAA	1
BABAABBAAB	1
BABABAAABB	1
BABABABABB	3
BBBBBBBBAB	1
With some missing	2
Total	32

Note: One observation has some missing in both game 1 and game 2

Table B4 – Game-P at T=1 – Consistent choices

Choices in Game-P at T=1	Frequency
AAAAAAAAAA	19
AAAAAAAAAB	19
AAAAAAAABB	3
AAAAAAABBB	4
AAAAAABBBB	11
AAAAABBBBB	9
AAAABBBBBB	5
AAABBBBBBB	6
AABBBBBBBB	8
ABBBBBBBBB	2
BBBBBBBBBB	55
Total	141

Appendix C: Empirical model

We call "treatment group" the children involved in the *** laboratory and "control group" those children not involved in it. Let 0 and 1 denote the two time periods in which children are asked to play the game-P for the first and the second time, and the *** laboratory be given at some time between 0 and 1. Each child is observed twice (we work with a balanced panel). We are interested in measuring the effect of the *** laboratory on the level of patience of children and on the consistency of their choices (our dependent variables y). Define dummy G=1 if the individual participates in the programme and dummy T=1 if the time period is equal to 1. At T=0 none of the groups is exposed to the treatment. In T=1 only the treated take part in the programme. Those who received the treatment are therefore identified by $D_{iT}=G_i*T_T$. Therefore D_{iT} is equal to 0 at T=0 for both the treated and the non-treated, while at T=1 it is equal to 1 for the treated and to 0 for the non-treated.

To estimate the effect of the treatment we adopt a difference-in-differences approach. The method starts from the assumption that the difference between the treatment and the control groups at T=1 cannot be fully explained as a pure effect of the treatment as, normally the treatment and the control group do not start from the same point. Consequently, the difference-in-differences calculates the "normal" difference in the outcome variable between the two groups, i.e. the difference that would still exist if neither group experienced the treatment. The treatment effect is the difference between the observed difference in the outcome and the "normal" difference in the outcome.

Let the level of patience of child i in group G at time T be y_{iGT}. As normal in the difference-in-differences approach, we assume that in absence of any treatment $E(y_{iGT}|G,T, D=0)= \gamma G +\lambda T$, i.e. the control and the treated groups start from different points (γ if G=1; 0 if G=0) but they would develop along the same time-trend (λ). Moreover, we posit $E(y_{G1}- y_{G0}|G, D=1)= \delta$, which means

that we assume that the variation in y due to the treatment (D) does not depend on G, i. e. it would be equal across groups.

Then we can write the model as $y_{iGT} = \gamma G + \lambda T + \delta D + \varepsilon_{iGt}$ with $E[\varepsilon_{iGt}|G, T] = 0$.

In this case, the treated group time-difference is $E[y_{iGT}|G=1, T = 1]-E[y_{iGT}|G=1, T = 0]= (\gamma + \lambda + \delta) – (\gamma)$. The control group time-difference is $E[y_{iGT}|G=0, T = 1]-E[y_{iGT}|G=0, T = 0] = \lambda$. Combining these pieces of information, we get that the difference between the differences captures the pure treatment effect:

$(E[y_{iGT}|G=1, T = 1] - E[y_{iGT}|G=1, T = 0]) – (E[y_{iGT}|G=0, T = 1] - E[y_{iGT}|G=0, T = 0])= \lambda + \delta- \lambda = \delta$

To estimate the effect of the *** laboratory on the patience level of students who provide consistent answers, we consider a linear potential response equation and we estimate the following specification:

(3) $Y_{iT}= \alpha + \beta_G$ group$+ \beta_T$ time$+ \beta_D$(group*time)$+ \mathbf{\beta x}+u_{i+} \varepsilon_{iT}$

where $E(\varepsilon_{iT}=0)$ and we allow for the effect of a set of explanatory variables (**x**) and a time invariant individual specific error component (u_i). β_T captures the learning effect due to the repetition of the game. β_D identifies an "externally valid" treatment effect, i.e. an effect valid not just for the control group but also for all the other groups at all times. To estimate the model we implement a random effect and a fixed effect GLS model.

To evaluate the effect of the treatment on the inconsistency of responses, we run instead a random effect probit. In nonlinear models such as probit, the treatment effect cannot be constant across treated populations, because the expectation of the outcome variable is bounded (Athey and Imbens 2006). To address this issue, we apply the difference-in-differences assumption of a common trend to the unobserved latent linear index (Puhani 2012)

The probit difference-in-differences model is then:

(4) $E[Y|$group,time,X$]= \Phi(\beta_G$ group$+ \beta_T$ time$+ \beta_D$(group*time)$+ \beta_1 x)$

Because Φ is a strictly monotonic function, the sign of the coefficient of β_D is the same as the sign of the effect of the treatment; this is equal to zero if and only if the coefficient β_D is zero. However, the effect of the treatment is the incremental effect of the coefficient β_D. Analogously, β_G and β_T do not identify the dimension of the time effect (constant across groups) and of the group effect (constant across time) directly; instead, there would still be no time and no group effect if they are zero. As before, in the estimates we also allow for the presence of an individual-specific time-invariant component of the error term (u_i) with non-zero mean and uncorrelated with the other regressors. Consequently, to estimate the model we implement a random effect probit. As a further additional specification we also account for the presence of a fixed effect error component and we implement a fixed effect linear probability model (Angrist and Pischke 2009).

Appendix D – Additional descriptive statistics and analyses

Table D1 - Descriptive Statistics

	Treated group					Control group				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Group of children providing inconsistent responses										
Male	28	0.36	0.49	0	1	23	0.48	0.51	0	1
Father education: High school	27	0.44	0.51	0	1	21	0.52	0.51	0	1
Father education: University	27	0.41	0.50	0	1	21	0.00	0.00	0	0
Mother education: High school	27	0.41	0.50	0	1	21	0.48	0.51	0	1
Mother education: University	27	0.44	0.51	0	1	21	0.14	0.36	0	1
Older siblings (Yes/No)	26	0.35	0.49	0	1	22	0.36	0.49	0	1
Younger siblings (Yes/No)	26	0.35	0.49	0	1	21	0.67	0.86	0	3
Math grade	26	8.00	0.98	6	9	21	8.10	1.18	6	10
Weekly Allowance (Yes/No)	26	0.54	0.51	0	1	21	0.29	0.46	0	1
Savings (Yes/No)	26	0.81	0.40	0	1	22	0.50	0.51	0	1
Group of children providing consistent responses										
Male	89	0.54	0.50	0	1	22	0.64	0.49	0	1
Father education: High school	86	0.41	0.49	0	1	22	0.45	0.51	0	1
Father education: University	86	0.41	0.49	0	1	22	0.00	0.00	0	0
Mother education: High school	87	0.38	0.49	0	1	22	0.55	0.51	0	1
Mother education: University	87	0.51	0.50	0	1	22	0.09	0.29	0	1
Older siblings (Yes/No)	86	0.48	0.63	0	2	21	0.38	0.59	0	2
Younger siblings (Yes/No)	85	0.52	0.89	0	7	20	0.45	0.60	0	2
Math grade	83	8.39	0.81	7	10	18	8.61	0.61	8	10
Weekly Allowance (Yes/No)	82	0.32	0.47	0	1	20	0.00	0.00	0	0
Savings (Yes/No)	80	0.89	0.32	0	1	20	0.55	0.51	0	1

Note: Balanced panel of consistent answers excluding three outliers. Strict criterion to define consistency. All the variables, but Math grade, are dummies; yes is coded as 1, no as 0.

Table D2 - Descriptive statistics for the variables used in table 4, columns (ii)-(iii)

	Treated group			Control group		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Impatience level[a]	150	3.21	3.74	36	8.56	2.29
Male	150	0.60	0.49	36	0.61	0.49
Father education: High school	150	0.40	0.49	36	0.44	0.50
Father education: University	150	0.43	0.50	36	0.00	0.00
Mother education: High school	150	0.37	0.49	36	0.61	0.49
Mother education: University	150	0.53	0.50	36	0.06	0.23
Older siblings (Yes/No)	150	0.51	0.64	36	0.33	0.59
Younger siblings (Yes/No)	150	0.53	0.92	36	0.44	0.61
Math grade	150	8.39	0.82	36	8.61	0.60
Weekly allowance (Yes/No)	150	0.32	0.47	36	0.00	0.00
Savings (Yes/No)	150	0.88	0.33	36	0.56	0.50

Note: Balanced panel of consistent choices excluding three outliers. Strict criterion to define consistency. All the variables, but Math grade, are dummies; yes is coded as 1, no as 0. a) computed as the number of A choices before any switch in game-P.

Table D3 – The effect of the treatment on the impatience level – same as table 4 without excluding the three outliers

	(i) Random-effect GLS regression b/se	(ii) Random-effect GLS regression b/se	(iii) Random-effect GLS regression b/se	(iv) Fixed-effect regression b/se
Time (T)	-1.080	-1.143*		
	(0.728)	(0.692)		
Group (G)	-5.065***	-5.879***		
	(1.222)	(1.419)		
Treatment effect (D=T*G)	0.406	0.343		
	(0.780)	(0.757)		
Time (T)*male			-1.429***	-1.429**
			(0.484)	(0.468)
Time (T)*female			-0.571	-0.571
			(0.548)	(0.530)
Group (G)*male			-5.831***	
			(1.251)	
Group (G)*female			-5.876***	
			(1.782)	
Treatment effect (D)*male			0.229	0.229
			(0.656)	(0.635)
Treatment effect (D)*female			0.371	0.371
			(0.716)	(0.693)
Male		0.307	0.757**	
		(0.745)	(0.314)	
Father education: High school		0.781	0.782	
		(0.776)	(0.780)	
Father education: University		1.132	1.131	
		(1.034)	(1.057)	
Mother education: High school		0.391	0.389	
		(0.619)	(0.636)	
Mother education: University		0.291	0.291	
		(0.689)	(0.699)	
Older siblings (Yes/No)		-0.326	-0.326	
		(0.359)	(0.361)	
Younger siblings (Yes/No)		-0.271	-0.271	
		(0.413)	(0.420)	
Math grade		-0.243	-0.244	
		(0.583)	(0.584)	
Weekly allowance (Yes/No)		-0.444	-0.444	
		(0.742)	(0.751)	
Savings (Yes/No)		1.635***	1.636***	
		(0.623)	(0.629)	
Constant	8.840***	9.265**	8.970*	4.719***
	(0.431)	(4.564)	(4.658)	(0.127)
R-squared	0.244	0.304	0.307	0.003
N	228	192	192	192
Tests (P-values):				
T+D=0	0.0159	0.0092		
[T+D]*male=0			0.0068	0.0266
[T+D]*female=0			0.6646	0.6675
T*male=T*female			0.0000	0.0000
D*male= D*female			0.8340	0.8347
[T + D]*male= [T + D]*female			0.1406	0.1715

Note: Balanced panel of consistent choices. Strict criterion to define consistency. Error terms clustered at class level. Standard errors in parentheses. Significance levels: *** p <0.01, ** p <0.05, * p <0.10, °p= 0.109

Table D4 – The effect of the treatment on inconsistency – same as table 5 without excluding the three outliers

	(i) Random-effect probit b/se	(ii) Random-effect probit b/se	(iii) Random-effect probit b/se	(iv) Fixed-effect linear probability model b/se
Time (T)	0.082	0.335**		
	(0.132)	(0.162)		
Group (G)	-0.620**	-0.406		
	(0.292)	(0.295)		
Treatment effect (D)	-0.456*	-0.662**		
	(0.255)	(0.327)		
Time (T)*male			-0.252	-0.071
			(0.410)	(0.047)
Time (T)*female			0.844	0.150
			(0.753)	(0.202)
Group (G)*male			-0.489*	
			(0.294)	
Group (G)*female			-0.416	
			(0.430)	
Treatment effect (D)*male			-1.115*	-0.067
			(0.655)	(0.049)
Treatment effect (D)*female			-0.633	-0.133
			(0.827)	(0.212)
Male		-0.712***	-0.136	
		(0.253)	(0.088)	
Father education: High school		0.113	0.136	
		(0.292)	(0.278)	
Father education: University		0.306	0.384	
		(0.271)	(0.298)	
Mother education: High school		-0.266	-0.290	
		(0.285)	(0.296)	
Mother education: University		-0.635**	-0.735**	
		(0.306)	(0.353)	
Older siblings (Yes/No)		-0.192	-0.230	
		(0.321)	(0.301)	
Younger siblings (Yes/No)		-0.203	-0.239	
		(0.183)	(0.212)	
Math grade		-0.313***	-0.344***	
		(0.107)	(0.118)	
Weekly allowance (Yes/No)		1.003***	1.105***	
		(0.251)	(0.249)	
Savings (Yes/No)		-0.118	-0.139	
		(0.127)	(0.139)	
Constant	-0.696***	2.260**	2.219**	0.218***
	(0.170)	(1.090)	(1.092)	(0.015)
lnsig2u				
Constant	0.046	-0.466	-0.132	
	(0.000)	(0.000)	(0.000)	
R-squared adj.				0.036
N	330	278	278	330

Note: Balanced panel of consistent choices according to the strict criterion (see Appendix B). Error terms clustered at class level. Standard errors in parentheses. Significance levels: *** p <0.01, ** p <0.05, * p <0.10.

Table D4 (continued) – The effect of the treatment on inconsistency – same as table 5 without excluding the three outliers

	(i) Random-effect probit	(ii) Random-effect probit	(iii) Random-effect probit	(iv) Fixed-effect linear probability model
Test (P-values):				
T+D=0	0.0862	0.2061		
[T+D]*male=0			0.0126	0.0001
[T+D]*female=0			0.5289	0.8042
T*male=T*female			0.3538	0.4018
D*male= D*female			0.7163	0.8022
[T+D]*male=[T+D]*female			0.0013	0.0409

Note: Balanced panel of consistent choices according to the strict criterion (see Appendix B). Error terms clustered at class level. Standard errors in parentheses. Significance levels: *** p <0.01, ** p <0.05, * p <0.10.

Latest CeRP Working Papers

N° 169/17	Flavia Coda Moscarola Matteo Migheli	Gender Differences in Financial Education: Evidence from Primary School
N° 168/17	Cecilia Boggio Flavia Coda Moscarola	What is Good for the Goose is Good for the Gander? A Field Experiment on Gender, Language and Financial Market Participation
N° 167/17	Johannes G. Hoogeveen Mariacristina Rossi Dario Sansone	Leaving, staying or coming back? An analysis of the migration dynamics during the Northern Mali conflict
N° 166/17	Carlo Maccheroni Samuel Nocito	Backtesting the Lee-Carter and the Cairns-Blake-Dowd Stochastic Mortality Models on Italian Death Rates
N° 165/16	Dario Sansone	Teacher Characteristics, Student Beliefs and the Gender Gap in STEM Fields
N° 164/16	Noemi Oggero Mariacristina Rossi	Does financial literacy of parents matter for the educational outcome of children?
N° 163/16	Sara Burrone Elsa Fornero Mariacristina Rossi	Retirement Decisions, Eligibility and Financial Literacy
N° 162/16	Elsa Fornero Mariacristina Rossi Dario Sansone	"Four Bright Coins Shining at Me". Financial Education in Childhood, Financial Confidence in Adulthood
N° 161/16	Riccardo Calcagno Flavia Coda Moscarola Elsa Fornero	Too busy to stay at work. How willing are Italian workers "to pay" to anticipate their retirement?
N° 160/16	Elisa Luciano Antonella Tolomeo	Information effects in longevity-linked vs purely financial portfolios
N° 159/16	Margherita Borella Michele Belloni	Self-Employment in Italy: the Role of Social Security Wealth
N° 158/16	Claudio Morana	Macroeconomic and Financial Effects of Oil Price Shocks: Evidence for the Euro Area
N° 157/16	Riccardo Calcagno Maela Giofré Maria Cesira Urzì-Brancati	To trust is good, but to control is better: how do investors discipline financial advisors' activity
N° 156/16	Elisa Luciano Mariacristina Rossi Dario Sansone	Financial Inclusion and Life Insurance Demand; Evidence from Italian households
N° 155/16	Claudio Morana	The US$/€ exchange rate: Structural modeling and forecasting during the recent financial crises
N° 154/15	Vincenzo Andrietti	Auto-enrollment, Matching, and Participation in 401(k) Plans
N° 153/15	Donatella Baiardi Claudio Morana	Financial deepening and income distribution inequality in the euro area
N° 152/15	Ewa Gałecka-Burdziak Marek Góra	The impact of easy and early access to old-age benefits on exits from the labour market: a macro-micro analysis
N° 151/15	Margherita Borella Flavia Coda Moscarola	The 2011 Pension Reform in Italy and its Effects on Current and Future Retirees

The full series is available at: http://www.cerp.carloalberto.org/category/publications/working-papers/