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Abstract: In all the surveys carried on financial literacy by OECD-PISA among 15-year-old students, Italy is one of the few countries that highlights a significant gender gap, with boys performing better than girls; in Spain, this is not the case. Previous studies show that, together with individual characteristics, opportunities, values, and information from family and the cultural context in which teenagers live may play a role in shaping this gender gap. This paper focuses on advancing the literature on the possible factors explaining the gender gap in financial literacy by adopting a perspective comparing the two countries. It relies on data from the 2018 OECD-PISA on financial literacy (the Italian sample includes 9,122 students; the Spanish one includes 4,100 students). We ran several multivariate analyses, and the outcomes indicate that the differences in the gender gaps in mathematics between the two countries partially explain differences in the gender gaps in financial skills, while the frequency of school activities directly or indirectly dealing with financial education compose a larger part of the explanation. No strong and direct effect of family influence in financial matters is observed.

Keywords: financial literacy, gender gaps, Italy, Spain

1. Introduction: Gender Gaps in Levels of Financial Literacy

Gender differences in levels of financial literacy¹ have been found in several economies, from developing to advanced countries, with women performing worse than men (e.g., Lusardi & Mitchell, 2006, 2014; Atkinson & Messy, 2012; Klapper et al., 2015; Bucher-Koenen et al., 2017; Chobhthaigh, 2019). However, in some nations the gap appears to be narrowing (Grohmann, 2016), and in some sub-domains, such as behaviour and attitudes, gender differences were not found (OECD, 2020a). Women who are single and have lower levels of education and income seem to be particularly disadvantaged in several countries (Potrich et al., 2018; OECD, 2020a). Women also have financial literacy needs, notably because they tend to earn less and live longer than men, therefore being more likely to face financial hardship in old age. An international survey run in 2014 in several countries by Standard & Poor's (Hasler & Lusardi, 2017) showed that the share of fully financially literate women is higher in some richer countries (e.g., Sweden 70%, UK 68%, Norway 68%), and lower in poorer ones (e.g., Nepal 11%, Angola 10%, Afghanistan 9%), while Spain and Italy, the focus of the present paper, are in an intermediate position (respectively, 48% and 30%).

As we noted elsewhere (Salmieri & Rinaldi, 2020), understanding the causes and consequences of the gender gap in financial literacy constitutes a key research objective for several reasons. For instance, the topic is central to the development of effective policies to narrow the gender gap; to support other social and economic outcomes linked to financial literacy, such as better saving greater financial resilience and financial wealth (OECD 2019; 2020a; 2020c); and to improve the financial security of women, a social group especially hard hit by the COVID-19 crisis at an international level (OECD, 2020c). It is acknowledged that the economic downturn caused by the pandemic is having significant implications for gender equality. Compared to "ordinary" recessions, which used to affect men's employment deeper than women's, the employment drop related to social distancing measures had a larger impact on sectors with high shares of female employment (Alon et al., 2020)². Additionally, closures of schools have massively increased childcare

¹ The definition of financial literacy adopted here is the one given by the OECD (2020b), that refers to "the process by which financial consumers and investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being" (OECD 2020b, p. 42). However, there are multiple definitions in the literature and debate about it is ongoing (e.g., Remund, 2010; Huston, 2010; Goyal & Kumar, 2021).

² Inadequate public attention to the gendered effects of the Ebola crisis, as well as insufficient attention paid to public policies supporting women during these times, has spurred calls for a more focused look at gender disparities during such health crises (Davies & Ben-

needs, which has had a particularly large impact on working mothers in many countries (Women Budget Group, 2021; Ducci, 2021).

However, to the best of our knowledge, few studies have attempted to explain why women are less financially literate than men, though there is promising research, and attention devoted to the topic has been growing (Fonseca et al., 2012; Rinaldi & Todesco, 2012; Bucher-Koenen et al., 2017; Cupák et al., 2018; Potrich et al., 2018; Chobhthaigh, 2019; Preston & Wright, 2019; Goyal & Kumar, 2021). According to several authors, there is no single explanation that can satisfactorily address gender differences (or the lack thereof) (Bucher-Koenen et al., 2017; Bottazzi & Lusardi, 2020). Some have argued that the gender gap in financial literacy may depend on the language used in related surveys, as finance is considered primarily a male domain (Boggio et al., 2014), or on the measurement of financial literacy³. Yet, this explanation does not seem satisfactory when gender gaps are not found in countries such as Spain or among adolescents, and when they are, conversely, observed in countries such as Italy, where the same measurement and language is used, such as in the OECD-PISA case⁴.

Others have argued that the gender gaps in financial literacy depends mostly on mathematics ability, which in several countries is higher for men than for women (Borgonovi et al., 2018). However, findings from PISA's 2012 dataset highlight that, even after accounting for students' performance in mathematics, boys perform better than girls in financial literacy in countries like Australia, the Flemish Community of Belgium, Croatia, Estonia, Italy, Latvia, Poland, China (particularly in Shanghai), Slovenia, the Slovak Republic, and the United States (Bottazzi & Lusardi, 2020, p. 8). This means that, among boys and girls with similar mathematics ability, boys anyway perform better in financial literacy.

The study by Fonseca and colleagues (2012) suggests that men and women may acquire their financial knowledge differently in several cultural contexts, and this idea is supported by the work of Mahdavi and Horton (2014), who observed that even high qualifies women have a lower level of financial literacy compared to men with similar backgrounds. Bucher-Koenen and colleagues (2017) attribute gender differences to a problem of self-confidence, which also differs by gender (financial confidence is lower for women). Nevertheless, Arellano and colleagues (2014) showed that the differences by gender remain after controlling for self-confidence and other attitude-based questions.

nett, 2016).

³ For example, there is evidence that women and girls are more likely to skip questions in multiple-choice settings (Baldiga, 2014; Riener & Wagner, 2017).

⁴ Organization for Economic Co-operation and Development - Programme for International Student Assessment.

Materialism (i.e., the importance attached to money as a factor contributing to one's overall satisfaction) may also play an important role, as research on gender differences in materialism has consistently reported that male socialization tends to be more materialistically oriented than female one in developed countries (Prince, 1993; Newcomb & Rabow, 1999; Rinaldi & Todesco, 2012). Since money is a more relevant matter for boys than girls, it is reasonable to expect that the former are also more interested and willing than the latter to invest in gaining knowledge and skills in financial matters (i.e., financial literacy) (Chen & Volpe, 1998)⁵. Several studies have indicated that both men and women see money as a representation of power, prestige, and success. However, it is a more direct and undisguised source of power for men than for women. This may produce and reproduce gender gaps in financial socialization patterns (Deutsch et al., 2003; Aydin & Selcuk, 2019).

Other studies found out that financial literacy is highly correlated with financial autonomy⁶ (such as having paid working experiences) and that the level of both general knowledge and saving and spending knowledge is higher among university students working casually or on holidays than among those who do not (Sarigül, 2014). In some countries including Italy men are more likely than women to have petty jobs during adolescence and early-adulthood and this may be an additional factor to be considered (ISTAT, 2011; 2020) when studying financial literacy and gender gaps. When it comes to the ownership of financial services, research shows that students in better educated families and those who consume more financial services are more competent under a financial point of view (Klapper et al., 2015). That seems to be true as well for those who have a bank account from early teenage (Sohn et al., 2012).

Bottazzi and Lusardi (2020) have relied on data from the 2012 PISA financial literacy survey in Italian regions and found that potential determinants of the gender gap in financial literacy are also parental backgrounds (especially the mother's role, which matters for girls' financial knowledge) and the social and cultural environment in which girls and boys grow. In other words, both men and women living in regions where people conform to traditional gender stereotypes have lower financial literacy; however, girls who live in places in which the Stereotype Index⁷ is one standard deviation

⁵ However, studies using a different definition of materialism, such as «a character considering the ownership of an object (product) as important to show off his/her status or to make him/her happy» (Arofah et al., 2018: 371), showed that it is correlated with a low level of financial literacy. According to these studies, a materialistic attitude encourages an individual to make compulsive purchases without thinking about or considering the consequences, thereby creating negative financial behaviours (Garðarsdóttir & Dittmar, 2012; Nye & Hillyard, 2013).

⁶ For a definition of financial autonomy, see Jariwala and Dziegielewski (2017).

⁷ The index, developed by ISTAT, measures incidents of discrimination by gender (Bottazzi

below the average (i.e., regions where the cultural attitudes are more oriented toward gender equality) score 23 points higher in financial literacy than do boys (Bottazzi & Lusardi, 2020). On the whole, these analyses suggest that students' social backgrounds, their abilities, financial socialization and experiences, as well as their cultural context may play a significant role in shaping gender gaps in financial literacy.

However, to the best of our knowledge, no other study has adopted a comparative perspective among nations to explore the issue in depth. To shed more light on the topic, we decided to analyse data from adolescents because focusing on this age group may help to better understand how patterns of financial socialization differentiate women from men, as suggested in the literature (Ivan & Dickson, 2008; Agnew et al., 2018). Therefore, we have studied a particular group of students – those aged 15 years who participated in the international OECD-PISA assessment survey on financial literacy⁸ carried on in 2018 (OECD, 2020b). In line with findings from previous waves (OECD, 2014), Italy showed a large and significant gender gap in financial literacy test scores, while other nations, such as Spain, did not. Therefore, in response to the literature outlined above, this paper asks four research questions:

1. What is the role of gender in predicting financial literacy in Italy and in Spain, compared to other individual predictors?
2. Can cognitive factors (mathematics and reading performance) alone explain the differential gender gaps in Italy and Spain?
3. Do financial interactions between parents and children play a leading role in explaining the magnitude of gender gap in financial literacy between Spain and Italy?
4. What other factors may explain different gender gap in financial literacy between Spain and Italy?

The paper is organized as follows. In the next section, we explain the reason why we compare Italy and Spain, among countries participating in the 2018 OECD-PISA survey and we give a brief overview of the main findings of gender gaps in financial literacy for the two countries. We then outline the theoretical background inspiring our analyses in Section 3. In Section 4,

& Lusardi, 2020, p. 14).

⁸ The definition for financial literacy used by OECD-PISA and in the present paper refers to the PISA financial literacy test, which measures «whether students have the knowledge and understanding of financial concepts and risks, as well as the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life» (OECD, 2019, p. 18). For more details on the structure of the assessment and the distribution of scores, see OECD (2019).

we describe methodologies, while in Section 5 we present main outcomes. Conclusions and policy implications are discussed in the last section.

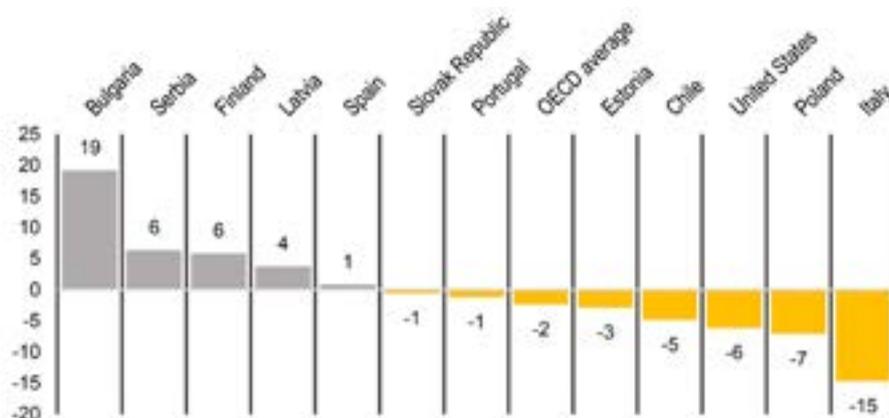
2. Comparing Italy to Spain

Italy and Spain are two of the seven countries that participated in all three PISA financial literacy assessments conducted among 15-year-olds in 2012, 2015, and 2018 (the other five countries are Australia, Poland, Russia, the Slovak Republic, and the United States)⁹. We decided to compare only Italy and Spain for three reasons. Firstly, the two countries have similar educational policies in financial education matters: the topic is not compulsory in the national curricula and there are no compulsory guidelines to be followed by organizations promoting financial-education school projects. Secondly, despite having similar mean scores in financial literacy at the national level (OECD, 2020a)¹⁰, they differ sharply in terms of the gender gap in financial literacy: as reported in Figure 1, Italian 15-year-old boys perform better than Italian girls, while in Spain the gap is not significant (see also OECD, 2020c). The difference between Italian girls' and boys' performance in financial literacy in the last PISA assessment is the widest gender gap observed in terms of points scored among selected countries. Previous research highlighted that this gender gap in Italy was also found among the wider group of teenagers (OECD, 2014, 2020b) and among adults (OECD, 2020a), but not among pre-adolescents (Rinaldi & Todesco, 2012). In Spain, the gap seems to be consistent only among adults, with adult men performing better than adult women in financial literacy, especially when it comes to financial knowledge (Banco de España, 2017; Hospido et al., 2021, Aguiar-Díaz & Zagalaz-Jiménez, 2021). A third reason for our choice, is the fact that while financial literacy performance has improved from 2015 to 2018 in Spain, as well as in other countries participating in the OECD-PISA survey, this is not the case in Italy, neither for boys nor for girls (Figure 2).

⁹ Even if differences in test administration indicate uncertainty in the comparison of student performance between 2015 and 2018, two-thirds of the test items in the 2018 assessment were also used in the 2012 and 2015 assessments, therefore assuring a minimum ratio for comparison.

¹⁰ The top three mean scores were earned by Estonia (547), Finland (537), and the Canadian provinces (532). The lowest was achieved by Indonesia (388). For further details, see OECD (2020b, p. 12).

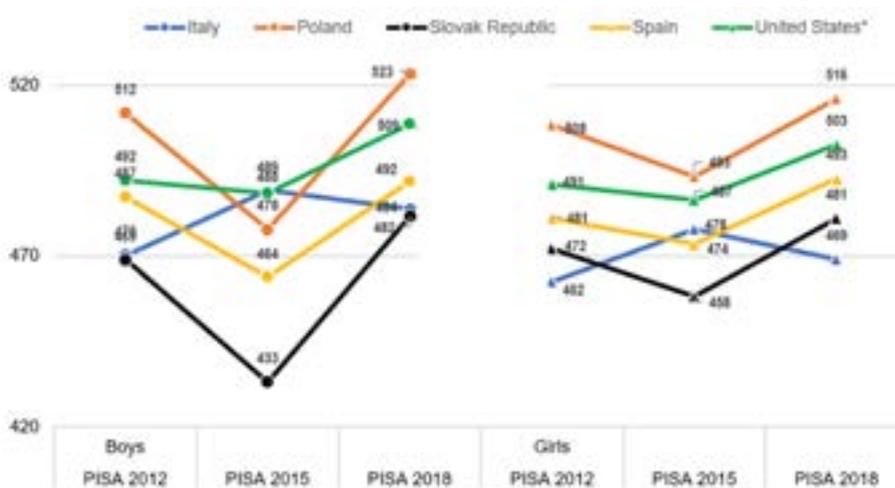
Figure 1. Gender differences in financial literacy performance (mean score difference)



Source: Processing of OECD 2020 data (Volume IV), Tables IV. B1.3.4, IV.B1.3.10, and IV.B1.3.22.

This difference increases our interest in the study of the Italian situation. Given these observations, it would almost seem that the explanation for this cross-national difference lies in the greater attention paid in the Spanish education system to dealing with financial topics within lessons of the official curriculum in other official fields of studies such as, for example, mathematics. We consider this hypothesis in the development of the analyses.

Figure 2. Change over time in mean financial literacy scores, by gender



Source: Processing of OECD 2020 data, Table IV.B1.3.8. *Note: The data did not meet the PISA 2018 technical standards but were accepted by OECD as largely comparable.

We now turn to exploring students' sources of information about money matters by gender (Table 1). In each selected country, the parent–daughter relationship is found to be more statistically sensitive as a source of information on money issues than the student's relationship with the media, such as the Internet, TV and radio. It is noteworthy that, once again, Italy (after Slovakia) has the widest gender gap in the parent–child information flow about money matters: compared to boys, 5% more girls report that their parents are an information source, while in Spain it is 3.6% more. Other differences in the gender gap between Italy and Spain can be found in the use of the Internet, TV, and radio (used more by Italian girls compared to boys, while the opposite is true in Spain). Data on magazine use and communication with friends deserve particular attention since the gender gap is much higher in Italy than in Spain pointing out that girls use these sources of information less frequently than boys do. Other than Italy, no selected country reported a two-digit gender gap in the percentage of respondents who looks to peers as a source of financial information. Perhaps this is an indicator of how widely interests vary between male and female peer groups in Italy and how, more than elsewhere, cultural differences in gender stereotypes affect discussion about money among friends. Some research has shown that peer influence is particularly strong in some financial behaviours for certain youth groups (Erskine et al., 2005; Goetz et al., 2011). Thus, although this is not the focus of the paper, it needs further investigations.

Table 1. Students' sources of information about money matters, by gender (differences for girls–boys in %)

	Parents, guardians or other adult relations	Television or radio	Internet	Teachers	Magazines	Friends
Slovak Republic	5.3	1.9	1.1	0.2	-1.2	-1.7
Italy	5	1.7	2.6	3.4	-4.5	-12.5
Bulgaria	4.6	-0.7	-1.5	-2	-5.1	-5.6
Lithuania	4.6	2.8	1.7	0.3	-0.1	-4.3
Poland	4.2	3	-0.4	-1.9	-0.2	-0.4
Finland	3.6	-8.5	0.5	5.6	-8.9	-3.9
Spain	3.6	-2.6	-1.2	6.1	-2.4	-5.2
Latvia	3.4	2.7	1.9	1.3	-1.5	-4
Estonia	3.3	0.2	1.3	-2.3	-4.8	-1.6
Serbia	2.6	-1.3	1	-2.3	-4.4	-5.8
Portugal*	1.9	3.2	-1	-0.3	1.3	-7
United States*	1.6	-2.5	-2.3	-4.1	-3.1	-8.4

Source: Processing of PISA 2018 results (Volume IV), OECD 2020 Table IV.B1.4.2. *Note: The data did not meet the PISA 2018 technical standards but were accepted by OECD as largely comparable.

When it comes to discussing money matters with parents, significant differences are again notable between Italy and Spain (Table 2). The difference between the percentages for girls and boys is negative in Italy for many topics (students' own spending decisions, students' own saving decisions, family budget), while positive in Spain. Girls speak with their parents about economics or finance news less than boys do in each selected country, but once again the gap in Italy (-11.3%) is much wider than in Spain (-6.4%).

Table 2. Students discuss money matters with parents, by gender (differences for girls-boys in %)

	Index of parental involvement in matters of financial literacy	Percentage of students who discuss the following topics with their parents at least once a month				
		Differences for girls-boys in %				
	Difference girls-boys Index dif.	Student's own spending decisions	Student's own saving decisions	Family budget	Money for things the student wants to buy	News related to economics or finance
Bulgaria	0.21	7.2	5.5	2.7	4.7	-7.3
Estonia	0.16	6.8	3.4	4.2	5.6	-3.8
Finland	0.07	5.8	-2.1	0.5	6.8	-10.0
Italy	-0.03	-3.9	-0.5	-3.4	1.8	-11.3
Latvia	0.07	7.0	-2.9	1.9	5.7	-10.5
Lithuania	0.12	6.9	0.3	3.1	4.2	-8.5
Poland	0.05	6.5	0.7	0.6	5.0	-12.5
Portugal*	0.15	4.2	2.9	-0.1	4.1	-0.9
Serbia	0.19	9.1	0.8	-0.1	4.6	-8.7
Slovak Republic	0.13	6.7	0.1	0.9	5.5	-9.4
Spain	0.11	2.6	3.3	0.7	5.3	-6.4
United States*	0.11	2.2	3.7	3.6	3.9	-7.4

Source: Processing of PISA 2018 results (Volume IV), OECD 2020 Table IV.B1.4.7. *Note: The data did not meet the PISA 2018 technical standards but were accepted by OECD as largely comparable.

Let us now look at students' sources of money and parents' agreement about the allocation of money within the families (e.g., allowance, money "on demand", money for working in family business, etc.). Previous studies from Italy found that boys receive more pocket money than girls do (Ruspini, 2012). Another survey from ISTAT (2011) documented that 53% of Italian boys aged 14–17 have a regular allowance, while only 42.1% of girls do. PISA data from 2018 confirm these gaps (Table 3): on average, fewer Italian girls than boys report receiving money from an allowance (–8.6%), from working outside school hours in informal jobs (–9.1%), and from working in a family business (–9.3%) or selling things (–12.9%), but more receive gifts from friends or relatives (+6.1%). In Spain, the gap is almost non-existent for occasional informal jobs (+0.5% in Spain vs a much wider –6.6% in Italy). The gap between Italian girls and boys in earning pocket money is remarkably wider for working outside school hours (–12.6% Italy vs –7.2% Spain) and/or in a family business (–12.0% Italy vs –8.7% Spain) as well as selling things (–19.1% Italy vs –14.5% Spain). These findings suggest that Italian parents are still inclined to provide early training in money management according to traditional gender roles by which boys become accustomed to earning money to strengthen their masculinity when young, while girls do not (Newcomb & Rabow, 1999).

Table 3. Sources of money, by gender (percentage difference between girls and boys receiving money from various sources)

	An allowance or pocket money for regularly doing chores at home	An allowance or pocket money without having to do any chores	Working outside school hours (e.g., a holiday job, part-time work)	Working in a family business	Occasional informal jobs (e.g., babysitting or gardening)	Gifts from friends or relatives	Selling things (e.g., at local markets or on eBay)
Bulgaria	–10.7	5.5	–13.9	–15.4	–13.7	8.0	–16.9
Estonia	–17.3	5.0	–5.5	–7.2	–6.3	6.8	–11.7
Finland	–10.6	–1.8	–4.8	–8.5	2.4	5.3	1.2
Italy	–7.8	–3.1	–12.6	–12.0	–6.6	7.6	–19.1
Latvia	–14.4	7.4	–11.4	–12.1	–3.9	8.8	–16.7
Lithuania	–11.4	0.2	–15.7	–12.9	–5.3	6.9	–15.3
OECD average	–8.6	2.5	–9.1	–9.3	–2.1	6.1	–12.9

Poland	-12.1	4.5	-11.7	-10.1	-7.7	9.5	-14.3
Portugal*	-6.5	-0.9	-10.4	-10.0	-5.4	2.5	-15.3
Serbia	-16.7	3.2	-22.0	-15.7	-15.1	6.3	-20.0
Slovak Republic	-10.8	4.6	-12.6	-9.6	-10.0	6.1	-13.6
Spain	-6.6	1.8	-7.2	-8.7	-0.5	4.2	-14.5
United States*	-5.0	9.4	-10.7	-8.7	1.2	5.0	-17.3

Source: Processing of PISA 2018 results (Volume IV), OECD 2020 Table IV.B1. 6.15. *Note: The data did not meet the PISA 2018 technical standards but were accepted by OECD as largely comparable.

The data outlined above, although at a descriptive level, show that financial socialization patterns seem to provide different opportunities, resources, and sources of information for boys and girls in Italy and Spain. On the whole, these results –related to contemporary Italy – are in line with previous international research that suggests that the gender gap in financial literacy can arise from gender-differentiated sets of practices and expectations that parents display towards their children during adolescence or youth, which may cause girls to develop distinct fears, preferences, and confidence levels in financial matters (Prince, 1993; Rabow & Rodriguez, 1993; Newcomb & Rabow, 1999). To shed more light on the issue, we focus on the role of parents as financial socialization agents and, following Agnew and colleagues (2018), we rely on the theory of gender development as the theoretical background.

3. Theory of Gender Development

According to Ridgeway (2001) and the Status Characteristics Theory, gender inequalities are due to status beliefs – that is «widely held cultural beliefs that link greater social significance and general competence, as well as specific positive and negative skills» with one category of a social distinction (e.g., men) compared to another (e.g., women) (Ridgeway, 2001). For example, one status belief may be that men are better in handling money and deserve a higher income compared to women. In line with this hypothesis, some studies have shown that, in Italy, boys feel more competent and confident in money matters compared to girls early when they are pre-adolescents and have very limited hands-on experience with handling money

(Rinaldi & Todesco, 2012). In Spain, gender differences in self-confidence look much weaker (Arellano et al., 2014).

There is also evidence of gender bias in the ways that parents interact with their children in money matters in terms of purposive or explicit financial socialization. According to Gudmunson and Danes, this can be defined as «intentional efforts family members use to financially socialize each other» (2011, p. 649), usually (but not always) from parent to child. As stated by LeBaron and colleagues (2020), the primary purposive method of financial socialization seems to be parent-child discussion about finances and money (i.e., communication about money between parents and children - see also Serido & Deenanath, 2016). Sometimes parent-child discussions are gender biased. For example, as seen above in Table 2, Italian girls report speaking much less frequently, compared to boys, about “news related to economics or finance”, while this gap is lower in Spain. Additionally, Italian girls speak with their parents less frequently than boys do about their own spending and saving decisions as well as about the family budget, while the opposite is true for Spanish students.

4. Methodologies and Aims

We now aim at identifying plausible factors explaining the gender gap in financial literacy in Italy by adopting a cross-national comparative perspective (e.g., Cordero et al., 2020; De Beckker et al., 2020). We rely on the OECD-PISA 2018 data on financial literacy to compare financial socialization patterns in both Italy and Spain. The sample includes 9,122 Italian students aged 15 years and 4,100 Spanish students of the same age. Multivariate regressions were run, first, to find out whether the differential gender gap can be explained via differences in the mathematics and reading gender gaps and, second, to determine the extent to which the financial literacy gender gaps of the two countries would converge if the financial socialization parameter effects were discounted. To avoid the use of a large number of variables in this last model, the dimensions of the sets of variables related to financial autonomy have been reduced by running a principal components analysis (PCA). Finally, logistic regression was run to compare the relative impact of each of the factors.

As shown in previous studies of PISA data (OECD, 2014, 2020b), financial competence is strongly correlated with both reading and mathematics performance. Thus, the difference in the financial literacy gender gap found between Italy and Spain could be caused by differences between the two countries, both in terms of cognitive factors (i.e., reading and mathematics performance) and/or in terms of non-cognitive factors (among them, financial socialization patterns).

To determine the effects of socialization patterns on the gender gap in financial performance, it is necessary to consider whether countries differences in the mathematics and reading gender gaps can explain, by themselves, the gender gap in financial literacy. We ran a multivariate OLS (ordinary least squares) linear regression in which the dependent variable is the financial literacy performance (plausible values)¹¹ and the independent variables are mathematics performance, reading performance (both plausible values), and gender (category variable where girl=0 and boy=1)¹². All calculations carried out in this study used IBM's SPSS software (version 26). All the syntaxes have been generated by employing the IEA's IDB software, whose macros allow us to make calculations using the ten plausible values generated for each student and each competence. We also apply Fay's method with 80 replications and a factor $k = 0.5$ as a resampling method for bi-steps samples. The results of the linear regression are shown in Table 4.

Table 4. The influence of cognitive factors on financial literacy. Parameters of the linear regression ($\alpha=0.05$)

	Variable	Coefficient (standard error)	T-value
Spain	(Constant)	36.17 (4.88)	7.41
	Boy	2.21 (1.76)	1.26
	Pv_math	0.58 (0.02)	26.59
	Pv_read	0.36 (0.02)	15.99
Italy	(Constant)	41.69 (5.51)	7.57
	Boy	8.85 (1.83)	4.83
	Pv_math	0.59 (0.02)	29.24
	Pv_read	0.3 (0.02)	12.74

Source: authors' elaborations of OECD-PISA 2018 financial literacy data

¹¹ Since the Third International Mathematics and Science Survey conducted by the IEA in 1995, student proficiency estimates are returned through plausible values which offer several methodological advantages in comparison with classical Item Response Theory (IRT) estimates such as the Maximum Likelihood Estimates or Weighted Maximum Likelihood Estimates. Indeed, plausible values return unbiased estimates of *i*) population performance parameters, such as mean, standard deviation or decomposition of the variance; *ii*) percentages of students per proficiency level as they are on a continuous scale, unlike classical estimates which are on a non-continuous scale; *iii*) bivariate or multivariate indices of relations between performance and background variables as this information is included in the psychometric model (OECD, 2009).

¹² The regression intends to model what happens within each country separately in three cases: without accounting for any factor, accounting for cognitive factors, and accounting for cognitive and non-cognitive factors, and then to compare the evolution of the weight of gender across these three cases.

5. Findings and Discussion

As Table 4 shows, even after controlling for mathematics and reading performance, the coefficients for gender still differ by 6.64. Constructing the 95% confidence intervals with a 95% significance proves that the difference is statistically significant, although it has been markedly reduced from the gender gap difference between the two countries without controlling for maths and reading performance (15.55). This means that the difference between gender gaps in financial literacy is not entirely explained by the difference between gender gaps in mathematics (significant) and reading (non-significant) in the two countries. This prompts us to consider the hypothesis that financial socialization pattern differences may help explaining financial literacy gender gap differences. Considering previous findings (MEFP, 2020; OECD, 2020b) and the tables displayed above, the identified financial socialization variables that may impact performance in financial literacy are: *i*) student's sources of financial information; *ii*) family influence on financial matters; *iii*) Student's financial autonomy; *iv*) student's participation in the financial system (by holding basic financial products); *v*) student's confidence in managing financial matters; *vi*) student's confidence in using digital financial services, and *vii*) student's interest in money-related matters.

The variable for students' sources of financial information captures whether the child receives financial information from their parents, from the students' responses to this question (dummy variable). Family influence on financial matters is measured via an index of parental involvement that is zero-averaged with a standard deviation of one for the OECD countries.

A principal components analysis (PCA) has been carried on in order to abridge the effect of the four variables related to the students' financial autonomy. As a result of this, two principal components have been extracted, which explain more than 65% of the observed variance in students' responses to the questions about to which extent they agreed with the following statements: "I can decide independently what to spend my money on". "I can spend small amounts of my money independently, but for larger amounts I need to ask my parents or guardians". "I need to ask my parents or guardians for permission before I spend any money on my own". "I am responsible for my own money matters (e.g., for preventing theft)". Parameters related to the two components' construction are shown in Tables 5 and 6. From here onwards, each of these components will be named "Fac1-autonomy" and "Fac2-autonomy", respectively.

Table 5. Total variance explained, Factors for students' autonomy.

Components	Initial Eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	1.406	35.15	35.15	1.406	35.15	35.15
2	1.220	30.6	65.66	1.220	30.51	65.66
3	.793	19.83	85.50			
4	.580	14.51	100.00			

Source: authors' elaborations of OECD-PISA 2018 financial literacy data. Note: The extraction method used was principal components analysis.

Table 6. Component matrix with factors for students' autonomy

	Components	
	1	2
Agree: I can decide independently what to spend my money on.	.799	-.241
Agree: I can spend small amounts of my money independently, but for larger amounts I need to ask my parents or463	.657
Agree: I need to ask my parents or guardians for permission before I spend any money on my own.	-.024	.845
Agree: I am responsible for my own money matters (e.g., for preventing theft).	.743	-.123

Source: authors' elaborations of OECD-PISA 2018 financial literacy data. Note: The extraction method used was principal components analysis, with two components extracted.

To measure the student's participation in the financial system, we used a proxy variable indicating whether they hold a bank account. The student's confidence in managing financial matters and in utilizing digital financial services are measured, respectively, using an index of confidence in financial matters and an index of confidence in digital financial services use; each is zero-averaged for OECD countries, with a standard deviation of one. A student's interest in money-related matters is gauged through responses to the question: «To what extent do you agree with the statement, “By now, money matters are not relevant to me?”». Responses range from one (strongly disagree) to four (strongly agree).

In addition to these variables, which are closely related to financial socialization, one more has been included regarding the student's expectations about their academic future. This variable was constructed from the student's answers to questions regarding whether they expect to complete the education levels ranging from ISCED 2 to ISCED 6. This has been included because one's own academic expectations are also influenced by expectations about future occupational and professional achievements, which have a social gender bias.

All these indicators have been included as independent variables in a multivariate OLS linear regression model, along with the plausible values for both mathematics and reading, and gender (boy=1, girl=0). The dependent variable is the plausible values for financial literacy. Results for this model are shown in Table 7.

The model explains 75% of the variance for Spain, and 73% of the variance for Italy as displayed in Table 8 which is based on the Adjusted R Squared statistic calculated as $[1 - (1 - R_Square) * (n - 1) / (n - p - 1)]$ where p is the number of regressors and n is the sample size¹³. Some conclusions can be drawn from Table 7. First, the gender gap difference between Italy and Spain has slightly decreased (from 6.64, if only cognitive factors were considered, to 5.49), but remains statistically significant ($|t\text{-stat}| \geq 1.96$). This could mean that, besides cognitive and socialization factors, other variables may influence the gender gap difference and need to be identified. Second, there seems to be a set of variables whose influence on financial literacy performance does not differ significantly from zero, in either Italy or Spain, if we focus on the t-statistics significant ($|t\text{-stat}| < 1.96$). These are the factors that summarize the students' answers to questions regarding financial autonomy, their responses to questions about their sources of financial information, family involvement in financial matters, and holding a bank account.

¹³ While most statistical software used the actual number of cases for the value of n , SPSS uses the sum of the weights, thus resulting in different values for the Adjusted R Squared statistics when compared to those calculated by other software.

Table 7. The influence of cognitive and non-cognitive factors on financial literacy. Parameters of the linear regression ($\alpha=0.05$).

	Variables	RC	RC (s.e.)	RC (t-stat.)	SC	SC (s.e.)	SC (t-stat.)
Spain	(Constant)	48.78	7.87	6.16	.	.	.
	Expectation	3.87	1.23	3.15	0.04	0.01	3.16
	Fac1_autonomy	0.66	1.09	0.60	0.01	0.01	0.60
	Fac2_autonomy	-1.08	0.80	-1,35	-0.01	0.01	-1.35
	Sources_fin_info	5.11	4.19	1.22	0.01	0.01	0.46
	Proxy_materialism	-3.89	1.53	-2.53	-0.04	0.02	-2.51
	Flconfin	3.00	1.44	2.09	0.04	0.02	2.11
	Flconict	2.28	1.59	1.43	0.03	0.02	1.43
	Flfamily	1.67	1.37	1.22	0.02	0.02	1.22
	Bank_account	-2.51	1.83	-1.37	-0.01	0.01	-1.38
	Gender	0.98	2.14	0.46	0.01	0.01	0.46
	Pv_math	0.56	0.02	24.28	0.52	0.02	23.90
	Pv_read	0.35	0.02	15.18	0.37	0.03	14.50
Italy	(Constant)	58.54	7.83	7.47	.	.	.
	Expectation	3.06	1.22	2.51	0.03	0.01	2.52
	Fac1_autonomy	0.57	1.22	0.46	0.01	0.01	0.46
	Fac2_autonomy	-2.00	1.05	-1.91	-0.02	0.01	-1.90
	Sources_fin_info	-4.30	3.89	-1.11	-0.01	0.01	-1.01
	Proxy_materialism	-1.57	1.27	-1.24	-0.01	0.01	-1.24
	Flconfin	5.38	1.43	3.75	0.06	0.02	3.74
	Flconict	4.46	1.63	2.73	0.05	0.02	2.75
	Flfamily	0.94	1.15	0.82	0.01	0.01	0.82
	Bank_account	-2.14	2.13	-1.01	-0.01	0.01	-1.01
	Gender	6.47	2.19	2.95	0.04	0.01	2.94
	Pv_math	0.56	0.02	24.35	0.56	0.02	22.86
	Pv_read	0.30	0.03	11.88	0.31	0.03	11.96

Source: authors' elaborations of OECD-PISA 2018 financial literacy data. Note: RC= Regression coefficient. SC= Standardised coefficient.

Table 8. Model parameters ($\alpha=0.05$)

	Adjusted R2	(standard error)
Spain	0.75	0.01
Italy	0.73	0.01

Source: authors' elaborations of OECD-PISA 2018 financial literacy data.

Finally, there is a couple of non-cognitive variables other than gender which seem to impact significantly on the financial literacy performance, both in Italy and Spain: the student's expectations about their academic future and the student's confidence in financial matters. In both cases, there is a direct proportionality: the highest value of the variable, the highest financial literacy performance. There are also two variables whose impact's significance differs depending on the country. In Spain, students who declared that money has relevance for them performed significantly worse than students for which money does not matter; in Italy, notwithstanding, the effect of this variable is not significant. On the other hand, in Italy, the student's confidence in utilizing digital financial services impacts positively and significantly on the financial literacy performance, while in Spain does not.

Since a moderate impact on the gender gap difference can be assigned to these financial-socialization factors, knowing the relative weight of each can help educational policy makers in a country to reduce the gender gap. With this purpose, a multivariate logistic regression was run, discarding the variables cited in the preceding paragraph. The dependent variable is binary and has been coded zero if financial performance is below and one if it is over the national median. A similar transformation has been applied to the measures of mathematics and reading performance, as well as to the index variables. For the materialism variable, a value of zero has been assigned to students who answered to "strongly disagree" or "disagree" that money matters are not relevant to them. For the variable about expectations, a value of one has been assigned to students expecting to reach the tertiary education level. Results for the logistic regression are shown in Table 9. A description of the reference category has been added to ease comprehension of the table. It can be concluded that the performance relevance is much higher than those for other factors. The non-cognitive factor with the highest impact on financial literacy is the expectation about educational attainment, in Italy and in Spain. The influence of this indicator should be interpreted cautiously since,

as already noted, all the continuous variables have been re-coded to dummy variables, which leads to information loss.

Table 9. Relevance of cognitive and non-cognitive factors on financial literacy.

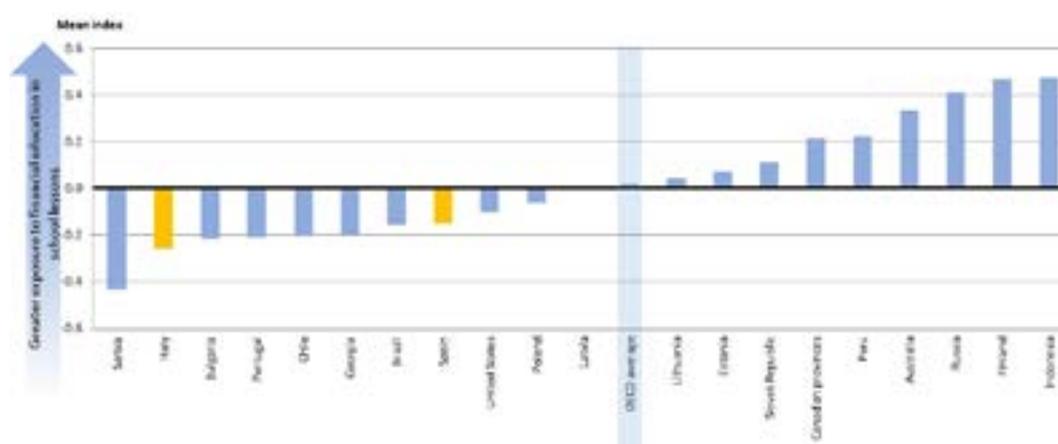
	EqVar	Reference category	b	ExpB	b.se	ExpB.se
Spain	Constant		-6.61	0.00	0.31	0.00
	Math_perf	Performance < median	2.22	9.20	0.15	1.34
	Read_perf	Performance < median	1.83	6.26	0.15	0.93
	Expectation	Non-tertiary education	0.54	1.73	0.16	0.27
	Financial_confid	Index value < median	0.34	1.41	0.17	0.23
	Materialism	Money has not relevance	0.19	1.21	0.14	0.17
	Digital_serv_conf	Index value < median	0.16	1.17	0.15	0.17
	Gender	Girls	0.11	1.12	0.15	0.17
Italy	Constant		-6.65	0.00	0.31	0.00
	Math_perf	Performance < median	2.21	9.14	0.16	1.42
	Read_perf	Performance < median	1.58	4.91	0.21	1.03
	Expectation	Non-tertiary education	0.46	1.59	0.15	0.23
	Financial_confid	Index value < median	0.22	1.25	0.16	0.21
	Materialism	Money has not relevance	0.21	1.23	0.11	0.14
	Digital_serv_conf	Index value < median	0.32	1.39	0.14	0.19
	Gender	Girls	0.39	1.48	0.12	0.17

Source: authors' elaborations of OECD-PISA 2018 financial literacy data. Parameters of the log regression. ($\alpha=0.05$)

If the differences between Italy and Spain in terms of the gender gap in financial literacy seem to be only partially explained by the fact that girls in Italy have wider gaps in mathematics scores compared to boys than is the case in Spain, and if the conditions of family socialization also seem to have only a partial impact, what other factors might be at work?

We can stress out that in both countries there seems to be relevant differences for the students' exposure to lessons and educational activities during which indirect references to economics and money matters are at play. Even if formal financial education is not included in national curricula neither in the Italian, nor in the Spanish education system, we however know that finance-related issues can also be dealt with in other classical fields of studies, such as for example during a lesson in History covering the birth of modern banking systems or in the comprehension of a novel text portraying the conduct of a businessman. This is where we need to look for other answers to our research question. In fact, we have observed that, in Italy less often than in Spain, male and female students, taken together, are exposed to discussions about tasks and problems connected to financial aspects (Figure 3).

Figure 3. Frequency of students' exposure to financial literacy tasks in school lessons



Source: PISA 2018 Results (Volume IV), OECD-PISA Database (2018).

Furthermore, if we examine what boys and girls report separately about their school experience, indicating how much they have been exposed to lessons that dealt directly or indirectly with financial issues (Table 10), we find out a noteworthy fact: Italian and Spanish boys achieve a similar score on the index of financial education in school lessons (-0.19), while there is a significant difference between girls from the two countries such that the former score (-0.32) is much lower than the latter (-0.11).

Table 10. Index of financial education in school lessons

	Boys Mean index	Girls Mean index	Difference (girls–boys) index
Australia	0.44	0.22	-0.22
Canadian provinces	0.32	0.11	-0.21
Chile	-0.13	-0.28	-0.16
Estonia	0.14	0.00	-0.14
Finland	0.49	0.45	-0.04
Italy	-0.19	-0.32	-0.13
Latvia	0.09	-0.09	-0.18
Lithuania	0.11	-0.01	-0.12
Poland	0.02	-0.15	-0.17
Portugal*	-0.14	-0.29	-0.15
Slovak Republic	0.20	0.03	-0.17
Spain	-0.19	-0.11	0.09
United States*	-0.01	-0.20	-0.19
OECD average	0.09	-0.05	-0.14

Source: PISA 2018 Results (Volume IV), OECD-PISA Database (2018), Table IV.B1.5.9. *Note: The data did not meet the PISA 2018 technical standards but were accepted by OECD as largely comparable.

This relevant difference can mean several things: Italian girls participate less than their peers in classes or extra-curricular projects related to financial education, or they participate to a similar extent but retain less information, which indicates minor involvement or less effort by teachers due to prevailing gender bias. In fact, if we look in detail at the percentages of students who encountered tasks or activities related to financial issues “sometimes” or “often” in a school lesson over the previous 12 months, we note that the gender gap in Italy is always wider, whatever task or activity we select, compared to the Spanish one. Indeed, in the case of Spain, for certain tasks, such as “exploring the difference between spending money on needs and wants”

or “analysing advertisements to understand how they encourage people to buy things”, the gap is in favour of girls over boys (Table 11).

Table 11. Tasks and activities in school lessons, by gender (percentage of students who had encountered tasks or activities sometimes or often in a school lesson over the previous 12 months)

		Italy	Spain	OECD average
Describing the purpose and uses of money	Boys	49.1	52.2	69.0
	Girls	42.7	50.8	64.9
	Difference (girls–boys)	–6.4	–1.4	–4.1
Exploring the difference between spending money on needs and wants	Boys	58.8	65.5	73.0
	Girls	56.3	69.6	69.8
	Difference (girls–boys)	–2.6	4.1	–3.1
Exploring ways of planning to pay an expense	Boys	58.8	55.7	66.9
	Girls	53.3	55.0	60.6
	Difference (girls–boys)	–5.6	–0.7	–6.3
Discussing the rights of consumers when dealing with financial institutions	Boys	53.7	46.6	61.4
	Girls	45.0	43.4	52.7
	Difference (girls–boys)	–8.7	–3.2	–8.7
Discussing the ways in which money invested in the stock market changes value over time	Boys	51.9	52.5	62.5
	Girls	42.9	52.0	53.8
	Difference (girls–boys)	–9.0	–0.5	–8.7
Analyzing advertisements to understand how they encourage people to buy things	Boys	56.7	61.9	69.6
	Girls	52.3	67.0	66.6
	Difference (girls–boys)	–4.4	5.1	–3.0

Source: PISA 2018 Results (Volume IV), OECD-PISA Database (2018), Table IV.B1.5.10. Note: Results based on students’ reports.

We have tested the hypothesis of the differentials in time exposure to school lessons dealing directly or indirectly with financial matters using a OECD-PISA set of 18 questions in which students were asked whether during the last 12 months they had heard or learned about the following concepts: interest payment, compound interest, exchange rate, depreciation, shares/stocks, return on investment, dividend, diversification, debit card, bank loan, pension plan, budget, wage, entrepreneur, central bank, income tax, credit default swap and call option. Students had three response options: 1. 'Never heard of it'; 2. 'Heard of it but I don't recall the meaning'; 3. 'Learned about it, and I know what it means'. After checking all the 18 variables, we opted for recoding them to dummy variables, with a value of 1 for those students who had enough exposure intensity to have learned about the concept (former value 3), and a value of 0 for those who had not (former values 1 and 2). Then we have computed the average of the 18 dummy variables in order to obtain a continuous variable per record ranging from 0 to 1, in which the value 1 is assigned to those students who had a high intensity of exposure to the 18 concepts.

The first relevant finding is that there is not a statistically significant difference in the intensity of exposure between Spanish boys and girls in Spain, while in Italy the difference is remarkable, since boys are much intensively exposed than girls.

Table 12. Intensity of exposure to financial concepts in school lessons. Mean by gender

		N of cases	Sum of W_FSTUWT	Sum of W_FSTUWT (s.e.)	%	% (s.e.)	Intensity of exposure (mean)	Intensity of exposure (s.e.)	Std. Deviation	Std. Deviation (s.e.)	% missing
Spain	girls	4469	196457,7	3220,56	49,71	,49	,43	,01	0,27	0,00	4,54
	boys	4469	198725,3	3077,03	50,29	,49	,43	,01	0,30	0,00	4,25
Italy	girls	4200	242806,1	6641,43	49,24	1,01	,35	,01	0,27	0,00	5,10
	boys	4368	250252,7	6347,33	50,76	1,01	,40	,01	0,31	0,00	5,91

Source: authors elaboration from OECD-PISA Database (2018).

We have then run a linear regression analysis to check whether the intensity of exposure to financial concepts at school impacts on financial literacy performances at OECD-PISA tests and we have found out that the impact is substantial. Finally, we have to underline that the impact is not affected if we analyse Italian and Spanish students separately or together: in both case the regression coefficient is positive and differs significantly from 0 (all the t-values are higher than 1,96), confirming that the highest intensity of exposure, the highest performance.

Table 13. Linear regression analyses of Spanish and Italian students' intensity of exposure to school lessons on 18 financial concepts.

	Variable	Regression coefficient	Regression coefficient (s.e.)	Regression coefficient (t-value)	Standardized coefficient	Standardized coefficient (s.e.)	Standardized coefficient (t-value)
Spain	(Constant)	469,80	3,05	153,82	.	.	.
	Intensity of exposure	56,44	5,92	9,53	,19	,02	9,88
Italy	(Constant)	467,55	3,35	139,39	.	.	.
	Intensity of exposure	32,10	5,95	5,39	,10	,02	5,88
Spain + Italy	(Constant)	468,67	2,27	206,63	.	.	.
	Intensity of exposure	44,27	4,20	10,55	,14	,01	10,84

Source: authors elaboration from OECD-PISA Database (2018).

We therefore suggest that the exposure to financial concepts directly and indirectly dealing with financial literacy during school lessons has a key role in explaining the difference in the gender gaps in financial performances at standardised tests, between Italy and Spain and we believe that in very general terms, the more students are exposed to financial concepts at school, the more gender gaps in financial literacy are likely to decrease.

6. Conclusions and Final Remarks

In closing, when we explore two culturally similar countries, such as Italy and Spain, both with an educational and curricular system that does not provide the official teaching of financial education, there are marked differences in the gender gaps in financial literacy: Italian girls have a lower level of financial literacy than their male peers, while Spanish girls are on par with Spanish boys. Why? There are several intertwined explanations. First, part of the cross-national difference is explained by the mediating effect of the levels of competence in mathematics, a subject that, on the one hand, supports the instrumental learning of the use of money and itself is strengthened by economic practices and daily tasks facilitating and training the application of numerical skills. We observed that minimal gaps between Spanish boys and girls exist for mathematics performance at school, while the gaps between Italian boys and girls are wider, to the disadvantage of girls.

However, even after controlling for the mediating effect of mathematical skills, differences between the Italian and Spanish gender gaps in financial literacy remained unexplained. There must be mechanisms at work in the black box of socialization and, specifically, in the role played by parents and peer groups. Yet, through a series of regression models incorporating several independent variables, we have found that family influences seem to matter little, although the information provided by the PISA questionnaire about this topic could be biased since it is related to the student's perception.

Therefore, having verified that there seemed to be other family or peer factors playing an active role in the difference between Italy and Spain (at least among the variables used in the OECD-PISA's questionnaire), we have identified and verified the importance of education and schools. We can plausibly argue that, in general terms, on school grounds, the more a cognitive and symbolic resource becomes available to all students – in this case, lessons and activities directly or indirectly centred on financial concepts – the fewer competitive mechanisms are produced. Knowing that competitive dynamics usually activate a greater male predisposition because of the traditional socialization of gender roles, financial education as a scarce resource therefore increases male involvement and decreases female commitment. The data and the linear regression analyse we run indicate that educational activities focused on or dealing with financial and economic issues are offered more frequently in Spain than in Italy, female involvement in these activities is higher in Spain than in Italy and the two factors combined impact on Spanish and Italian boys' and girls' performances in financial literacy measured via standardised tests.

Relevant implications for gender-friendly educational policies stem from our findings. The constantly increasing number of projects promoting finan-

cial education in Italy can be considered an encouraging sign of the effort that institutions are making to improve Italians' financial knowledge (Rinaldi & Refrigeri, 2021). Nonetheless, these projects have to pivot to promote commitment from teachers to take an active role in combatting gender biases.

Additional projects, resources, and initiatives are needed to include financial education in traditional curriculum subjects, broadening the set of occasions when girls' competence might be enhanced. Attempts should be made to run educational projects not only targeted specifically at girls, but also with better communication (e.g., campaigns to increase motivation and awareness of financial topics). Families and parents may play a significant role in promoting better financial literacy among girls: inter-generational projects may be tested, as well as web-based activities that engage students and their parents so that the Internet may fuel familiarity with digital financial tools. Italian policy makers and educational authorities should implement resources improving the quality, not only the quantity, of financial education activities and promote a truly higher level of financial literacy and wellbeing among Italian girls and boys of present and future generations.

References

- Agnew, S., Maras, P., & Moon, A. (2018). Gender differences in financial socialization in the home. An exploratory study. *International journal of consumer studies*, 42(3), 275-282.
- Aguiar-Díaz, I., & Zagalaz-Jiménez, J. R. (2021). Women and financial literacy in Spain. Does marital status matter?. *Journal of Women & Aging*, 1-15.
- Alon, T. M., Doepke, M., Olmstead-Rumsey, J., & Tertilt, M., (2020). *The impact of COVID-19 on gender equality*. National Bureau of Economic Research, Working Paper 26947. Retrieved from <http://www.nber.org/papers/w26947>
- Arellano, A., Cámara, N., & Tuesta, D. (2014). The effect of self-confidence on financial literacy. *BBVA Research WP*, 14(28), 1-25.
- Arofah, A. A., Purwaningsih, Y., & Indriayu, M. (2018). Financial literacy, materialism and financial behavior. *International Journal of Multicultural and Multireligious Understanding*, 5(4), 370-378.
- Atkinson, A., & Messy, F. A. (2012). Measuring financial literacy: Results of the OECD/International Network on Financial Education (INFE) pilot study. *OECD Working Papers on Finance, Insurance and Private Pensions*, 15, <https://doi.org/10.1787/5k9csfs90fr4-en>
- Aydin, A. E., & Selcuk, E. A. (2019). An investigation of financial literacy, money ethics and time preferences among college students: A structural equation model. *International Journal of Bank Marketing*, 37(3), 880-900.
- Banco de España, (2017). Survey of Household Finances 2014: Methods, results and changes since 2011. *Analytical Articles*, 1, 3-42.
- Baldiga, K. (2014). Gender differences in willingness to guess. *Management Science*, 60(2), 434-448.

- Boggio, C., Fornero, E., Prast, H. M., & Sanders, J. (2014). Seven ways to knit your portfolio: is investor communication neutral? *CeRP Working Paper* 140(14), 1-25.
- Bottazzi, L., & Lusardi, A. (2020). Stereotypes in financial literacy: Evidence from PISA. *NBER Working Paper* 28065. DOI 10.3386/w28065
- Borgonovi, F., Choi, Á. & Paccagnella, M. (2018). The evolution of gender gaps in numeracy and literacy between childhood and adulthood. *OECD Education Working Papers*, 184, <http://dx.doi.org/10.1787/0ff7ae72-en>
- Bucher-Koenen, T., Lusardi, A., Alessie, R., & Van Rooij, M. (2017). How financially literate are women? An overview and new insights. *Journal of Consumer Affairs*, 51(2), 255-283.
- Chen, H., & Volpe, R. P. (1998). An analysis of personal financial literacy among college students. *Financial services review*, 7(2), 107-128.
- Chobhthaigh, N.B. (2019). Understanding the Gender Gap in Financial Well-Being Evidence of a Gender Gap in Financial Well-Being in EU Member States. *European Economy Discussion Papers*, 121, 1-35.
- Cordero, J. M., Gil-Izquierdo, M. & Pedraja-Chaparro, F. (2020). Financial education and student financial literacy: A cross-country analysis using PISA 2012 data. *The Social Science Journal*, 59(1), 15-33, DOI: 10.1016/j.soscij.2019.07.011
- Cupák, A., Fessler, P., Schneebaum, A. & Silgoner, M. (2018). Decomposing gender gaps in financial literacy: New international evidence, *Economics Letters*, 168, 102-106.
- Davies, S. & Bennett, B. (2016). A gendered human rights analysis of Ebola and Zika: locating gender in global health emergencies. *International Affairs*, 92, 1041-1060.
- De Beckker, K., De Witte, K. & Van Campenhout, G. (2020). The role of national culture in financial literacy: Cross-country evidence. *Journal of Consumer Affairs*, 54(3), 912-930.
- Deutsch, F. M., Roksa, J., & Meeske, C. (2003). How gender counts when couples count their money. *Sex Roles*, 48(7), 291-304.
- Ducci, A. (2021). Lavoro, la crisi colpisce le donne: sono il 98% di chi ha perso il posto. *Corriere della sera*, 2 February.
- Erskine, M., Kier, C., Leung, A. & Sproule, A. (2005). Peer crowds, work experience, and financial saving behaviour of young Canadians. *Journal of Economic Psychology*, 27, 262-284.
- Fonseca, R., Mullen, K. J., Zamarro, G. & Zissimopoulos, J. (2012). What explains the gender gap in financial literacy? The role of household decision making. *The Journal of Consumer Affairs*, 46(1), 90-106.
- Garðarsdóttir, R. B., & Dittmar, H. (2012). The relationship of materialism to debt and financial well-being: The case of Iceland's perceived prosperity. *Journal of Economic Psychology*, 33(3), 471-481. <https://doi.org/10.1016/j.joep.2011.12.008>
- Goetz, J. W., Durband, D. B., Halley, R. E., & Davis, K. (2011). A Peer-Based Financial Planning & Education Service Program: An Innovative Pedagogic Approach. *Journal of College Teaching & Learning (TLC)*, 8(4), 7-14 <https://doi.org/10.19030/tlc.v8i4.4195>
- Goyal, K., & Kumar, S. (2021). Financial literacy: A systematic review and bibliometric analysis. *International Journal of Consumer Studies*, 45(1), 80-105. <https://doi.org/10.1111/ijcs.12605>
- Grohmann, A. (2016). The gender gap in financial literacy: income, education, and experience offer only partial explanations. *DIW Economic Bulletin*, 6 (46/47), 531-537.
- Gudmunson, C. G., & Danes, S. M. (2011). Family Financial Socialization: Theory and Critical Review. *Journal of Family and Economic Issues*, 32(4), 644-667. <https://doi.org/10.1007/s10834-011-9275-y>

- Hasler, A. & Lusardi, A. (2017). *The Gender Gap in Financial Literacy: A Global Perspective*, Washington, Washington: Global Financial Literacy Excellence Center, The George Washington University School of Business.
- Hospido, L., Izquierdo, S. & Machelett, M. (2021). Diferencias de género en competencias financieras, *Boletín Económico Banco de España*, 1, 2–19.
- Huston, S. J. (2010). Measuring financial literacy. *Journal of consumer affairs*, 44(2), 296–316.
- ISTAT. (2011). *Infanzia e vita quotidiana*, Rapporto di ricerca. Roma: Istituto Nazionale di Statistica.
- ISTAT. (2020). *Rapporto annuale 2020. La situazione del paese*. Roma: Istituto Nazionale di Statistica.
- Ivan, B. & Dickson, L. (2008). Consumer economic socialization. In J. J. Xiao, (ed.). *Handbook of Consumer Finance Research* (2nd ed.) (pp. 83–102), New York, NY: Springer.
- Jariwala, H. V. & Dziegielewski, S. F. (2017). Pathway to Financial Success: Autonomy Through Financial Education in India. *Journal of Social Service Research*, 43(3), 381–394. <https://doi.org/10.1080/01488376.2016.1217581>
- Klapper, L., Lusardi, A. & Van Oudheusden, P. (2015). *Financial literacy around the world. Standard & Poor's Ratings Services Global Financial Literacy Survey*. Washington: Standard & Poor's.
- LeBaron, A. B., Marks, L. D., Rosa, C. M. & Hill, E. J. (2020). Can We Talk About Money? Financial Socialization Through Parent–Child Financial Discussion. *Emerging Adulthood*, 8(6), 453–463. <https://doi.org/10.1177/2167696820902673>
- Lusardi, A. & Mitchell, O. S. (2006). Planning and Financial Literacy: How Do Women Fare? *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1094097>
- Lusardi, A., & Mitchell, O. S. (2014). The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature*, 52(1), 5–44. <https://doi.org/10.1257/jel.52.1.5>
- Mahdavi, M., & Horton, N. J. (2014). Financial Knowledge among Educated Women: Room for Improvement. *Journal of Consumer Affairs*, 48(2), 403–417. <https://doi.org/10.1111/joca.12032>
- MEFP. (2020). *PISA 2018. Competencia financiera. Informe español*. Madrid: Ministerio de Educación y Formación Profesional.
- Newcomb, M. D. & Rabow, J. (1999). Gender, Socialization, and Money. *Journal of Applied Social Psychology*, 29(4), 852–869. <https://doi.org/10.1111/j.1559-1816.1999.tb02029.x>
- Nye, P. & Hillyard, C. (2013). Personal Financial Behavior: The Influence of Quantitative Literacy and Material Values. *Numeracy*, 6(1), 1–24, <https://doi.org/10.5038/1936-4660.6.1.3>
- OECD. (2009). *PISA Data Analysis Manual: SPSS, Second Edition*. Paris: OECD Publishing. <https://doi.org/10.1787/9789264056275-en>
- OECD. (2014). *PISA 2012 Results: Students and Money: Financial Literacy Skills for the 21st Century (Volume VI)*, Paris: OECD Publishing. <http://dx.doi.org/10.1787/9789264208094-en>
- OECD. (2019). *PISA 2018 Assessment and Analytical Framework*. Paris: OECD Publishing. <https://doi.org/10.1787/b25efab8-en>
- OECD. (2020a). *OECD/INFE 2020 International Survey of Adult Financial Literacy*. Paris: OECD Publishing.
- OECD. (2020b). *PISA 2018 Results (Volume IV): Are Students Smart about Money?*. Paris: OECD Publishing. <https://doi.org/10.1787/48ebd1ba-en>

- OECD. (2020c). OECD Employment Outlook 2020. Worker Security and the COVID-19 Crisis. Paris: OECD Publishing. <https://doi.org/10.1787/1686c758-en>
- Potrich, A. C. G., Vieira, K. M. & Kirch, G. (2018). How well do women do when it comes to financial literacy? Proposition of an indicator and analysis of gender differences. *Journal of Behavioral and Experimental Finance*, 17, 28–41. <https://doi.org/10.1016/j.jbef.2017.12.005>
- Preston, A. C. & Wright, R. E. (2019). Understanding the Gender Gap in Financial Literacy: Evidence from Australia. *Economic Record*, 95(S1), 1–29. <https://doi.org/10.1111/1475-4932.12472>
- Prince, M. (1993). Women, men and money styles. *Journal of Economic Psychology*, 14(1), 175–182. [https://doi.org/10.1016/0167-4870\(93\)90045-m](https://doi.org/10.1016/0167-4870(93)90045-m)
- Remund, D. L. (2010). Financial Literacy Explicated: The Case for a Clearer Definition in an Increasingly Complex Economy. *Journal of Consumer Affairs*, 44(2), 276–295. <https://doi.org/10.1111/j.1745-6606.2010.01169.x>
- Ridgeway, C. L. (2001). Gender, Status, and Leadership. *Journal of Social Issues*, 57(4), 637–655. <https://doi.org/10.1111/0022-4537.00233>
- Riener, G. & Wagner, V. (2017). Shying away from demanding tasks? Experimental evidence on gender differences in answering multiple-choice questions. *Economics of Education Review*, 59, 43–62. <https://doi.org/10.1016/j.econedurev.2017.06.005>
- Rinaldi, E.E. & Refrigeri, L. (2021). Perché le competenze finanziarie degli italiani faticano a migliorare? Riflessioni sui dati ONEEF e proposte per il futuro, *QTimes. Journal of Education, Technology and Social Studies*, 13(3), 183–194
- Rinaldi, E.E. & Todesco, L. (2012). Financial literacy and money attitudes: Do boys and girls really differ? A study among Italian preadolescents, *Italian Journal of Sociology of Education*, 4, 2, 143–65.
- Ruspini, E. (2012). Girls, boys, money. Economic socialisation, gender, and generations in Italy. *International Review of Sociology*, 22(3), 514–529. <https://doi.org/10.1080/03906701.2012.730834>
- Salmieri, L. & Rinaldi, E. E. (2020). Gender Gaps in Financial Education. The Italian Case, In L. Salmieri & M. Colombo, (eds), *The Education of Gender. The Gender of Education. Sociological Research in Italy*, (pp. 141-168). Rome: Associazione Per Scuola Democratica.
- Sarigül, H. (2014). A Survey of Financial Literacy Among University Students. *Journal of Accounting & Finance*, 64, 207–224.
- Serido, J. & Deenanath, V. (2016). Financial parenting: Promoting financial self-reliance of young consumers. In J. J. Xiao (ed.), *Handbook of Consumer Finance Research* (2nd ed.) (pp. 291–300). New York, NY: Springer.
- Sohn, S. H., Joo, S. H., Grable, J. E., Lee, S., & Kim, M. (2012). Adolescents' financial literacy: The role of financial socialization agents, financial experiences, and money attitudes in shaping financial literacy among South Korean youth. *Journal of Adolescence*, 35(4), 969–980. <https://doi.org/10.1016/j.adolescence.2012.02.0>
- Women Budget Group. (2021). *Crises Collide: Women and Covid-19. Examining gender and other equality issues during the Coronavirus outbreak*, April, <https://wbg.org.uk/wp-content/uploads/2020/04/FINAL.pdf>