WOMEN AND FINANCIAL LITERACY IN SPAIN. DOES MARITAL STATUS MATTER?

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Cite as: Aguiar-Díaz, I., & Zagalaz-Jiménez, J. R. (2022). Women and financial literacy in Spain. Does marital status matter? *Journal of Women & Aging*, 34(6), 785-799.

Abstract

This study focuses on the joint effect of gender and marital status on financial literacy. The study is based on the data of 7,456 adults who responded to the Financial Competencies Survey (2016), conducted by the Bank of Spain. The results revealed that married/couple women have a lower level of financial literacy than married/couple men, perhaps because men often make decisions regarding family finances, while women are often in charge of other homework. This may have important consequences for the financial autonomy of women of all ages, especially as they aging.

Keywords: women, financial literacy, marital status.

JEL: D14, G40

Introduction

The role of women in society has evolved significantly with greater female participation in the labour market and higher levels of education amongst the female population. In addition, the growing life expectancy of women requires that they consider financial decisions to ensure a good quality of life in old age. This requires a greater level of autonomy when making financial decisions, for which a higher level of financial capabilities is needed, called financial literacy (hereafter, FL). This is 'a combination of knowledge, skill, attitude and behaviour necessary to make good financial decisions and ultimately acquire individual financial well-being' (OECD, 2011:3). According to de Berker et al. (2020), FL plays an important role in consumer decision-making because of the need for individuals to make fully informed financial decisions.

Numerous empirical studies have shown that women have a lower level of FL than men (e.g. Lusardi and Mitchell, 2008; Arrondel et al., 2013; Baglioni et al., 2018). Nevertheless, according to Fonseca et al. (2012:91), 'Understanding how and why men and women have different levels of financial literacy is crucial to developing policies aimed at reducing the gender gap and improving the saving and investing decisions of women'. Research has found that, among other sociodemographic factors, the role of women in family finances may be affected by their marital status, perhaps due to their greater dedication to domestic affairs and the making of financial decisions by husbands (Fonseca et al., 2012; Grohmann, 2016).

Most of the relevant studies have considered the effects of gender and marital status on FL separately, while the few that have analysed their joint effect were inconclusive. Thus, Fonseca et al. (2012) found that married women have a higher level of FL than married men and unmarried women in the United States. In their study of FL in Brazil, Potrich et al. (2018) found that amongst single women, there was a lower proportion of high FL levels than among married women. In the European context, there is only the work of Baglioni et al. (2018), which found no interaction effect between gender and marital status in financial literacy in Italy. From the perspective of gender studies, the role assigned to women in society differs depending on the prevailing cultural norms in each country. Thus, it is possible that the divergences are due to cultural values.

The objective of this study was to determine whether there is a joint effect of gender and marital status that contributes to explaining the gender gap in FL. Following the family financial socialisation framework (Gudmunson and Danes, 2011), we hypothesise that married/couple women are expected to have a lower level of FL than their male counterparts. To this end, information from the first Financial Competencies Survey, prepared by the Bank of Spain, between the last quarter of 2016 and the second quarter of 2017 has been used.

This study makes several theoretical and empirical contributions. First, unlike previous studies based only on roles theory, this study uses the family financial socialisation theory, and specifically the perspective of household division of labour. Likewise, it introduces new arguments about possible factors that contribute to explaining the differences in the level of FL between single and married women, such as the investment of financial knowledge and the role of financial advisors. This work provides empirical research focused on a European country, while the majority of previous studies concerned the United States. This is relevant because there are significant cultural differences between Europe and the US, as Stolper and Walter (2017) assert. Moreover, to our knowledge, this is the first study of FL of adults in Spain; previous studies focused on the level of financial knowledge in young people (e.g. Hospido et al, 2015; García-Aracil et al., 2016; Arellano et al., 2018).

Theoretical framework

The role of women in society has evolved with the greater incorporation of women into the labour market, leading to greater autonomy in economic decisions. In developed countries, legislation promotes equality policies. However, certain patterns of behaviour that give rise to differences between men and women regarding personal finances have persisted. These differences are partly explained by attitudes towards risk, self-confidence, or the higher earning-capacity of men in the workplace (Driva et al., 2016). Other social and cultural factors play an important role in explaining the difference between genders in terms of FL levels. The relationship between gender and FL has been analysed in numerous studies, most of which found a low level of FL in women (e.g. Lusardi and Mitchell, 2008; Almenberg and Säve- Söderbergh, 2011; Atkinson and Messy, 2012; Arrondel et al., 2013; Brown and Graf, 2013; Bucher-Koenen et al., 2017; Baglioni et al., 2018; Cupak et al.,

2018). Contrariwise, Klapper and Panos (2011) and Grohmann et al. (2016) found no gender differences in FL.

Marital status can be framed within the family's financial socialisation theory (Gudmunson and Danes, 2011). These authors propose a conceptual model that integrates the theory of family socialisation with personal finances. Specifically, they carry out an interdisciplinary critical review of FL from the perspective of socialisation. According to these authors, a holistic view of financial socialisation recognises that interaction patterns among family members influence the development of financial attitudes, knowledge transfers, and the development of financial capacity. Even if the theories of family socialisation have focused mainly on the relationship between parents and children, the most recent research suggests that it encompasses the relationships between all members of the family. According to Gudmunson and Danes (2011), financial socialisation occurs among many family relationships, not solely from parents to children, simply through interactions with other family members who are financially socialised. Similarly, Payne et al. (2014) assert that most teaching and learning of financial behaviours occur as family members observe the behaviour of others. Although these authors affirm that marital relationships can have a far-reaching impact on a couple's financial experiences, few studies have considered ways in which financial socialisation may occur within marriage. It has been shown that the investment behaviours of men and women can be significantly influenced by their respective partners. For example, Payne et al. (2014) found evidence of how couples financially socialise each other as they prepare for retirement, which supports the family financial socialisation theoretical framework.

Nevertheless, the empirical evidence is not conclusive. Thus, in their study of the USA, Fonseca et al. (2012) did not find differences in levels of FL between married (or de facto) and unmarried couples. Similarly, Kadoya and Khan (2019) found that marital status does not influence the level of financial literacy in Japan. In contrast, Bucher-Koenen et al. (2016) found that married women exhibit lower levels of financial literacy than married men, and Baglioni et al. (2018) found a higher level of FL in couples (married or unmarried) versus single individuals regardless of gender in Italy.

These differences may reflect different traditions and cultural aspects, specifically in the role assigned to women in household financial decision-making. According to Gorman

(2000), unlike single people, married people/couples have the chance to implement an efficient division of household tasks. This author asserts that from the perspective of the division of household labour, marriage tends to increase income earning responsibility for men but not for women. Contrariwise, women are predominantly responsible for childcare and the care of other family members such as parents (Kumar et al, 2019). As Fonseca et al. (2012:101) assert: 'A possible mechanism through which men and women produce different levels of financial literacy may arise through a process by which, within the household, men specialize in acquiring financial knowledge and women specialize in other household functions'.

Hsu (2016) suggests that the lower level of financial education of women could be a consequence of their own rational decision to let their husbands specialise in household financial matters. Thus, women have less financial knowledge when they live in a society where economic and financial decisions within the household are mainly made by men (Rink et al., 2021). This leads to women having less incentive to invest in acquiring financial knowledge, either formally or informally. Financial education is often of little use outside its immediate domain (Becker, 1962), so the opportunity cost of investing in its acquisition is relatively high. As a result, people who are or expect to be responsible for their household finances are more likely to anticipate a return on investment in financial knowledge. Therefore, people who expect others (e.g. their partner, friends, family, or the state) to manage their finances (current or future) are less likely to invest in acquiring financial literacy. This argument has been made by Lusardi and Mitchell (2014), who state that, in general, women may be less interested in financial matters than men and therefore invest less in acquiring financial knowledge. In addition, decision-making at home could increase women's financial literacy by giving them the opportunity to learn by doing (Filipiak and Walle, 2015).

According to the family financial socialisation theory, married/couple women can obtain financial knowledge through interactions with their husbands or partners. Thus, although men are responsible for household financial decisions, it is likely that there is a certain exchange of opinions between both members in a couple when spouses have different or opposing purposes for money and its use, which can result in financial disagreements (Dew and Dakin, 2011). For example, if one spouse acts unilaterally to assume debt or save money using jointly held resources, this may provoke conflict (Dew, 2007). This

disagreement may also be related to power and gender issues, since even today husbands tend to hold financial power within households, despite the increase in women's participation in the labour market (Dew and Dakin, 2011). Financial disagreements between spouses can create financial stress. In this regard, Lee and Dustin (2021) conclude that discussions on financial issues are crucial in a marital relationship, since financial stress significantly decreases the level of financial satisfaction among married individuals. Therefore, in order to reduce potential marital conflict, husbands may try to share their financial decisions with their wives, which imparts financial knowledge to them.

Previous studies have supported the existence of differences in the level of FL between women and men who are married or living with a partner, as well as between women who are married and women who are single. Specifically, Fonseca et al. (2012) found that married women have a higher level of FL than married men and unmarried women in the USA. In their study of FL in Brazil, Potrich et al. (2018) found that among single women, there was a lower proportion of high FL levels than among married women. Finally, Baglioni et al. (2018) found that there is no interaction effect between gender and marital status on financial literacy in Italy.

Arguments regarding the division of household tasks and the consequent delegation of financial decisions to the husband mean that married/couple women have less motivation to acquire financial knowledge, as well as fewer opportunities to learn by doing. Therefore, married/couple women are expected to have a lower level of FL than their male counterparts.

Methodology

Data

The source of information used in this study is the 2016 Financial Competencies Survey (hereafter, ECF), the only one available to date on Spain. This survey was carried out by the Bank of Spain and the National Securities Market Commission within the framework of the Financial Education Program. The National Institute of Statistics (INE) collaborated in selecting the population under study and provided a large sample of randomly selected individuals, representative of the entire territory of Spain and of each of its autonomous communities. The ECF is part of an international project coordinated by the

International Financial Education Network that was prepared following the methodology proposed by the OECD/INFE (2011, 2013), in order to allow comparison with other countries. It was conducted for the first time between the last quarter of 2016 and the second quarter of 2017 with the objective of measuring the financial competency of the adult population of Spain, specifically individuals aged between 18 and 79 years.

The survey measures Spanish adults' knowledge and understanding of financial concepts, as well as demographic variables, employment, and income level. The ECF-2016 contains responses from 8,554 individuals between 18 and 79 years old, although for this study, the individuals who answered all the necessary questions were selected to establish the necessary variables for the study, and the final sample comprised 7,456 individuals, with a similar number of men and women.

Dependent variable

Financial Literacy Index. The term 'financial literacy' has played a major role in financial literature since the 1990s, although there is some controversy about its meaning. Thus, some authors associate it exclusively with individuals' financial knowledge (e.g. Lusardi and Mitchell 2007, 2011; Guiso and Jappelli, 2008; van Rooij et al., 2011; Klapper et al., 2015; Klapper and Lusardi, 2020), while others argue that in addition to knowledge, the ability to apply such knowledge in making financial decisions must be considered (Huston, 2010). In this sense, FL is acquired not only through education, but also through practice, and maintains a strong connection with the profile of the family unit and its socio-economic characteristics. In this work, in order to measure the level of FL, an index was elaborated based on the definition proposed by the OECD (2011, 2013), according to which FL is based on three pillars: financial knowledge, financial behaviour, and financial attitude. For the preparation of this index, the OECD methodology published in 2017 was followed, which in turn follows the proposal by Atkinson and Messy (2012) in its pilot study to measure the FL level in 14 OECD economies (not including Spain). Among the authors who have developed a measure of FL including the three dimensions proposed by the OECD are Agarwalla et al. (2015, India), Potrich et al. (2015, 2018, Brasil), and Baglioni et al. (2018, Italy).

The financial knowledge sub-index is based on whether the subject correctly answers five questions regarding their understanding of certain financial concepts: inflation, simple

and compound interest, the relationship between the profitability-risk binomial, and the diversification of investment products. The variables that make it up are dichotomous and interpreted in a direct sense; that is, 1 indicates higher FL and 0 indicates lower FL. Thus, the sub-index can take values between 0 and 5. The financial behaviour sub-index can take values between 0 and 9, and can be interpreted as measuring family financial management. A higher value of the sub-index indicates better management, and vice versa. Thus, better management is an indicator of a greater level of FL. The financial attitude sub-index is based on answers to three questions regarding savings and is calculated as the sum of the scores given to the questions (from 1 to 5) divided by three, that is, the simple arithmetic mean. Therefore, the sub-index can take values from 1 to 5 and is interpreted directly, with 5 indicating the highest FL. Based on the sub-indices of financial knowledge, financial behaviour, and attitude towards savings, according to Atkinson and Messy (2012), the FL index is constructed by adding the scores obtained in each of the three sub-indices for each individual, so the FL index can range between 1 and 19, with 1 corresponding to the lowest FL and 19 to the maximum FL. Details of the composition of the indices are provided in Table A1 in the Appendix.

Independent variables

Explanatory variables. According to the hypotheses, gender and marital status were considered explanatory variables. Gender is determined through the variable *Women*, which takes the value 1 if the respondent is female and 0 if male. Marital status is determined through the variable *Married/couple*, which takes the value 1 if the respondent is married or has a partner with whom he or she is cohabiting and 0 for any other civil status (separated, divorced, widowed, single). The joint effect of gender and marital status is analysed through the variable *Women-Married/couple*, which takes the value 1 when the respondent is a women and is married or lives with a partner. Nevertheless, the value 0 can refer to a married or single man, as well as a single woman. To facilitate the interpretation of the results, two additional subsamples are considered: single households and married households. In addition, the variable Women-Married/couple is considered the reference value, while the variables *Men-Married/couple, Men-Single,* and *Women-Single* are used as explanatory variables.

Control variables. Klapper et al. (2013) argue that FL is critical among certain specific groups such as women, senior citizens, and pensioners, individuals with low levels of education, and income. Therefore, in this study, level of education, age, and income are considered control variables. In addition, circumstances of employment and location (size of the municipality and autonomous community) were included. Education is an important variable with the most direct influence on financial literacy, which is supported by psychological theory that emphasises cognitive ability (Lusardi et al., 2010; Sakoya and Khan, 2019). Educational level was collected through a dichotomous variable that takes a value of 1 if the individual has completed a university degree (*Higher_studies*), be it a bachelor's or a master's degree. Lusardi et al. (2011) argue that FL changes over a person's life cycle. Several studies have shown a lower level of financial literacy among the youngest and oldest individuals (e.g. Lusardi et al., 2010; Lusardi and Mitchell, 2011). The initial increase in financial literacy could come from experience, while the subsequent decline could be due to a decrease in cognitive abilities (Agarwal et al., 2009). The age of the respondent was included in the models by intervals or age groups, and four dichotomous variables were created, each taking the value 1 if the age of the individual was within the respective following ranges: *Age_18–34* (used as a reference group in the models), *Age_35–54*, *Age_55–64*, and *Age_65–79*.

According to Kadoya and Khan (2019), people with a higher income need to understand how to use money to maximise future benefits. Several previous studies found a positive and significant relationship between household income and FL (e.g. Guiso and Jappelli, 2008; Lusardi and Tufano, 2015). The level of family income is introduced through three dichotomous variables *(Income1, Income2, and Income3*), taking a value of 1 for those households with incomes below € 14,500, 2 between € 14,500 and € 45,000, and 3 above € 45,000, respectively. Following social learning theory, individuals who are employed and have more opportunities to learn about financial matters in the workplace should be more financially literate. Lusardi and Mitchell (2011) found that employed people have a higher level of financial literacy worldwide. Employment was determined using two dichotomous variables. The first takes the value 1 if the individual is *self-employed* and the second variable (e*mployed*) takes the value 1 if the individual works as an employee of a company. Both variables take the value of 0 if the individual is unemployed. Lastly, following Baglioni et al. (2018), two context-related variables are considered: the size of the municipality and the

region in which the respondent lives. *Municipality* is a dichotomous variable that takes the value of 1 if the individual resides in a municipality with more than 15,000 inhabitants and 0 if the population is less. Lastly, the *Autonomous Community (CCAA)* is determined through 17 dichotomous variables that capture geographical macro regions, one for each autonomous community.

Results

Descriptive analysis

Descriptive statistics of the explanatory and control variables are presented in Table 1; we see that 49% of the subjects were women, and 66% of those surveyed were married or living with a partner. Women-married/couple and men-married/couple make up a similar figure (33%), and the women-single and men-single groups are also similar (about 17%). The sample is characterised by a relatively low number of people with a higher level of education (only 22% of the sample were educated at the university level). Most of the subjects have an income of less than € 45,000; more than 60% of the sample were aged between 18 and 54; only 10% of respondents were self-employed and 43% were employed, while 66% lived in towns/cities with more than 15,000 inhabitants.

Table 1. Descriptive statistics of variables

	Mean	S.D.	Min	Max
Women	0.4982	0.5000	0	1
Married/couple	0.6629	0.4727	0	1
Women-Married/couple	0.3318	0.4708	0	1
Men-Married/couple	0.3311	0.4706	0	1
Women-Single	0.1664	0.3725	0	1
Men-Single	0.1706	0.3761	0	1
Higher studies	0.2271	0.4190	0	1
Age between 18-34	0.2373	0.4255	0	1
Age between 35-54	0.4286	0.4949	0	1
Age between 55-64	0.1719	0.3773	0	1
Age between 65-79	0.1620	0.3684	0	1
Incomes1 (<14,500€)	0.3599	0.4800	0	1
Incomes2 (14,500€-45,000€)	0.5056	0.5000	0	1
Incomes3 (> 45,000€)	0.1343	0.3410	0	1
Self-employed	0.1066	0.3086	0	1
Employed	0.4282	0.4948	0	1
Municipality	0.6659	0.4717	0	1

Source: own elaboration

Table 2 shows the statistical descriptions of the FL index (FLI). As can be seen, women present a lower level of FL than men, and married individuals show a higher FL. However, women-married have a lower FLI than men-married and more FLI than women-single.

Married men also have more FLI than single men. In all cases (except for singles) the difference is statistically significant at 1%.

Table 2. Financial literacy index by gender and marital status

		Mean	S.D.	Min	Max
FLI (N=7,456)	All sample	11.66	2.45	2	19
FLI by gender	Women	11.56	2.36	3	19
(N=7,456)	Men	11.76	2.53	2	19
	t-test	3.49***			
FLI by marital status	Married/Couple	11.83	2.41	4	19
(N=7,456)	Single	11.31	2.48	2	18
	t-test	-8.79***			
FLI by gender for married/couple	Women-married/couple	11.68	2.35	4	19
(N=4,943)	Men-married/couple	11.99	2.46	4	19
	t-test	4.57***			
FLI by gender for single	Women-single	11.32	2.36	3	17
(N=2,513)	Men-single	11.30	2.60	2	18
	t-test	-0.19			
FLI by married/couple for women	Women-married/couple	11.68	2.35	4	19
(N=3,715)	Women-single	11.32	2.36	3	17
	t-test	-4.38***			
FLI by married/couple for men	Men-married/couple	11.99	2.46	4	19
(N=3,741)	Men-single	11.30	2.60	2	18
	t-test	-7.97***			

FLI: Financial Literacy Index. N= number of observations
***, ** ,* significant at 1%, 5% and 10%, respectively

Source: own elaboration

Finally, to detect the existence of multicollinearity, the variance inflation factor (VIF) and the correlations between the variables were calculated (see Table A2 Appendix). As can be seen, the estimated VIFs were lower than 2, with an average of 1.32. Similarly, there was little correlation between the variables. Both analyses confirmed the absence of multicollinearity between the variables used in the models.

Econometric analysis

Testing the prediction requires that the dependent variable (FL index) adopt discrete values (from 1 to 19), so the models were estimated using OLS linear regression (Brown et al., 2018)[1]. The results are shown in Table 3. In Model 1, estimated for all sample, the association for the Women variable is negative and significant ($\beta = -0.2018$; $p < 0.01$), which indicates that women have a lower level of FL than men.

[1] All estimates have been made with the STATA 14 econometric package.

Table 3. Women, marital status and Financial Literacy in Spain

D.V.: Financial Literacy Index. Estimation method: linear regression.

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Sample	All sample	All sample	Single	Married/couple	All sample
	β *(S.E.)*	*β* *(S.E.)*	*β* *(S.E.)*	*β* *(S.E.)*	*β* *(S.E.)*
Explanatory variables					
Women	-0.2018***	0.0091	0.0148	-0.4218***	-
	(0.0558)	(0.0962)	(0.0987)	(0.0347)	
Married/couple	0.5266***	0.6845***	-	-	-
	(0.0591)	(0.0833)			
Women-Married/couple	-	-0.3181***	-	-	*Reference*
		(0.1181)			
Men-Married/couple	-	-	-	-	0.3090***
					(0.0677)
Men-Single	-	-	-	-	-0.3755***
					(0.0865)
Women-Single	-	-	-	-	-0.3663***
					(0.0813)
Control Variables					
Higher Studies	0.4077***	0.4047***	0.3922***	0.3031***	0.4047***
	(0..0732)	(0.0732)	(0.1310)	(0.0453)	(0.0722)
Age 18-34 years (ref.)					
Age 35-54 years	0.0417	0.0423	0.0638	0.1046**	0.0423
	(0.0728)	(0.0728)	(0.1291)	(0.0452)	(0.0724)
Age 55-64 years	0.2954***	0.2924***	0.3106*	0.1201**	0.2924***
	(0.8882)	(0.0887)	(0.1596)	(0.0547)	(0.0882)
Age 65-79 years	-0.0002	0.0011	0.0643	-0.0169	0.0011
	(0.0961)	(0.0960)	(0.1675)	(0.0602)	(0.0971)
Incomes 1 (ref.)					
Incomes2	0.1578***	0.1570**	0.1326	0.2215***	0.1570**
	(0.0639)	(0.0638)	(0.1142)	(0.0395)	(0.0638)
Incomes3	0.4871***	0.4905***	0.5690***	0.5516***	0.4905***
	(0.0988)	(0.0987)	(0.1744)	(0.0614)	(0.0974)
Unemployed (ref.)					
Self-employed	0.2243**	0.2225**	0.1979	0.0996	0.2225**
	(0.1018)	(0.1018)	(0.1757)	(0.0641)	(0.1013)
Employed	0.0710	0.0695	0.0216	0.0377	0.0695
	(0.0704)	(0.0703)	(0.1262)	(0.0433)	(0.0704)
Municipality	0.1310**	0.1290**	0.2086*	0.1467***	0.1209**
	(0.0623)	(0.0623)	(0.1108)	(0.0386)	(0.0618)
Auton. Community	Yes	Yes	Yes	Yes	Yes
Intercept	10.6893***	10.58***	0.1063***	2.3436***	10.96***
	(0.1255)	(0.1308)	(0.2057)	(0.0755)	(0.1219)
Observations	7,456	7,456	2,513	4,943	7,456
R-squared	0.0361	0.0370	0.0295	0.0907	0.0370
F	10.29	10.19	2.91	18.87	10.00

Incomes1,2,3: households below € 14,500, between € 14,500-45,000 and above € 45,000, respectively.
Reference (ref.).: omitted variable used as reference in the models.
Auton. Community: Autonomous Community. Results non report.
***, **, *significant at 1%, 5% and 10%, respectively.

Source: own elaboration

Regarding marital status, the Married/couple variable has a positive sign and significant value ($\beta = 0.5266$; $p < 0.01$), indicating that being married or living with a partner improves FL. In Model 2, the joint variable Women-Married/couple was included. In this model, the Women variable is not significant and Married/couple is positive and significant at 1%. Moreover, Women-Married/couple is negative and significant at 1% (($\beta = -0.3181$; $p < 0.01$). Therefore, although married individuals or those living with a partner show greater FL, in the case of women, this effect is reduced. In addition, it is noteworthy that when the joint effect of gender and marital status is considered, the individual effect of gender disappears, which suggests that it is not the gender itself that reduces FL, but rather being married or living with a partner.

Following West and Worthington (2018), Model 2 is re-estimated for the subsamples of single and married/couple. The numbers of single and married households were 2,513 and 4,943, respectively. Women represented approximately 50% of both samples. The results obtained in Model 3 indicate that in single households, the Women variable loses statistical significance, while in Model 4, Women is negative and significant at the 0.1% level (p-value < 0.001). These results confirm that only married/couple women had a lower FL level than married men, while single women did not have a different level of FL than single men. Therefore, the differences in the level of FL found in previous studies are mainly due to marital status and not gender per se.

In order to separate the gender effect from the marital status effect, Model 5 was estimated in a similar way to Nitani et al. (2020), in which married women were considered the reference group and the three alternatives (married men, single men, and single women) as explanatory variables. As can be seen, the three variables are significant (p-value < 0.001), that representing married men being positive and the other two negative. These results confirm that married women have a lower FL than married men and that the fact of being married or living with a partner increases FL with respect to single men, regardless of gender.

Regarding the control variables, the higher education variable is positive and significant, which predictably indicates that individuals with higher education have a higher level of FL than the rest. These results are in line with those obtained by Lusardi and Mitchell (2007, 2011, 2014), van Rooij et al. (2011), Klapper et al. (2013), Baglioni et al. (2018), and West and Worthington (2018). Age was only significant and positive in the 55–64 age groups

in all models and the 35–64 age groups in the married/couple sample (Model 4). The level of FL is highest at pre-retirement age, in which individuals need to plan their future finances. These results are in line with previous studies that have shown a lower level of FL among the youngest and oldest subjects (e.g. Lusardi et al., 2010; Lusardi and Mitchell, 2011). Income variables have a positive and significant relationship with the FL index. Therefore, it can be affirmed that individuals with the highest income level have greater financial literacy. One possible explanation is that individuals with a higher level of income have a greater need for information to invest in more sophisticated financial products. These results are in line with those obtained by Lusardi and Mitchell (2007, 2014), van Rooij et al. (2011), Klapper (2013), Lusardi and Tufano (2015), West and Worthington (2018), and Baglioni et al. (2018). Employment is not significant, while self-employed is positive (significant at 5%) only in the total sample (Models 1, 2, and 5). Living in an urban settlement with more than 15,000 inhabitants is favourable for improving FL. Lastly, regarding autonomous communities, considering the autonomous community of Andalusia as a reference, some differences are observed in different models (results not reported). In summary, it can be said that individuals with a higher level of FL are characterised as men who are married or living with a partner and have a high level of income and higher education, residing in an area with a population of over 15,000.

Discussion of results and conclusions

The present study focused on the joint effect of gender and marital status as explanatory factors of financial literacy in Spain. According to the arguments of financial family socialisation theory, as well as previous empirical evidence, we predicted that married women would have a lower level of financial literacy than married men.

The empirical study is based on a final sample of 7,456 individuals obtained from the ECF prepared by the Bank of Spain, which contains information on the knowledge and other sociodemographic characteristics of adults in Spain. Initial results regarding gender indicate that women have a lower level of FL than men. However, when the joint effect of gender and marital status is considered, the Women variable loses its explanatory power. These results are different from those obtained by numerous authors in different countries, such as Lusardi et al. (2010), Lusardi and Mitchell (2008, 2011), van Rooij et al. (2011), Klapper et al. (2013), Potrich et al. (2015, 2018), Driva et al. (2016), West and Worthington

(2018), Topa et al. (2018), and Klapper and Lusardi (2020). This may be due to the fact that most of these studies only use financial knowledge as a measure of FL, as well as the fact that they do not consider the interaction of gender with marital status.

Regarding marital status, the results indicate a higher level of FL among married or cohabiting individuals. A possible explanation for this result is the relatively higher level of expenses of married couples who have next of kin in their care, as well as a greater need for financial planning than unmarried individuals in order to meet their future needs. This can be explained by the arguments derived from the family financial socialisation theory, according to which individuals improve their financial literacy through interaction with others, and in particular with their partner. These results corroborate those obtained by Baglioni et al. (2018) in the context of Italy.

When considering both factors, gender and marital status, it is found that although being married or in a relationship contributes to improving one's FL, for married/couple women it has a negative effect. This may be due to the fact that men often make decisions regarding family finances, while women are often in charge of other tasks, which supports the arguments concerning the division of labour at home. This result coincides with that obtained by Bucher-Koenen et al. (2016), who found that married women have a lower FL level than married men in the US, the Netherlands, and Germany. This may have important consequences regarding the financial autonomy of women of all ages, especially those retired or widowed, since statistics point to a longer life expectancy of women than men.

According to Grohmann (2016), if the explanation is due to the different roles in the undertaking of household tasks, the gender gap will not occur in single households. Indeed, in the subsample of single households, there is no significant difference between men and women with regard to FL. Therefore, it can be affirmed that the gender gap increases in the case of married women or those who live with a partner. Thus, our predictions were corroborated. The results reveal that in Spain, it is men who handle family finances, which reduces the motivation of women to acquire financial knowledge and skills. However, the greater life expectancy of women means that it is prudent to give women greater financial autonomy. Therefore, in Spain, married women represent a target group for the delivery of financial education programmes.

In addition, the results reveal that single women have lower FL than married women. These results are similar to the findings of Fonseca et al. (2012) and Potrich et al. (2018) for samples from the USA and Brazil, respectively. A possible explanation is that single women use the contacts of family, friends, or professional counsellors to make financial decisions, which can compensate for lack of financial knowledge. In this regard, single individuals are responsible for both income and household tasks, including financial decisions, whereas married individuals or partners have the opportunity to divide domestic labour (Gorman, 2000). Thus, according to the division of household labour argument, it is expected that single women should have a higher FL than married women, since they cannot delegate financial decisions to a partner. However, as Hasler and Lusardi (2017) argue, even those for whom financial knowledge is likely to be very important – for example, widows or single women – know little about concepts relevant to day-to-day financial decision making. Additionally, some studies have evaluated the effect of the traditional roles of women in society and show that financial literacy is lower among single women who are also in charge of their own finances (Arellano et al., 2018). For example, Bertocchi et al. (2011) and Lei (2019) find that single women are less likely to own risky assets (such as stocks) than married women, which is associated with a lower level of FL. This represents a potential disadvantage for wealth accumulation and retirement (Hasler and Lusardi, 2017).

Therefore, to understand this result, it must be analysed from the perspective of several arguments. First, married women, although not always responsible for household financial decisions, have to manage a family budget, not only their personal finances. Therefore, they may require more financial knowledge than single women. Second, married women obtain FL through socialisation within the family sphere. Third, for cultural reasons, single women may not invest in acquiring financial knowledge since they may rely on delegation of future financial decisions to others (family, friends, the state) in the hope the other parties will solve their financial problems (Rink et al., 2021). Similarly, Japelli and Padula (2013) document that people are less likely to invest in financial education when the social system in their country is strong. Lastly, previous studies have shown that women often seek advice from financial professionals, which can be a substitute for their lower FL. ‘The notion that financial advice can become a substitute in lower levels of financial literacy rests on the assumption that individuals with lower financial knowledge face higher hurdles with regards to the collection and processing of information and thus save more on

information and search costs when turning to an advisor' (Stolper and Walter, 2017:627). Likewise, Hung and Yoong (2012) found that the least financially literate people choose to take advice, which supports the substitutability hypothesis between financial literacy and the demand for advice. Baeckstrom et al. (2021) have shown that women in general are more likely to request financial recommendations, which, according to Collins (2012), may indicate that they use the advice to build their financial skills[2].

Regarding the result related to the fact that single men and women have similar FL, two explanations are possible. First, unlike married people/couples, single individuals must make their own financial decisions. Accordingly, Rink et al. (2021) claim that those who are or expect to be responsible for their personal or household finances are more likely to anticipate a return on investment in financial knowledge. However, those who expect others (e.g. their partner or state) to manage their finances in the future are less likely to invest in financial literacy. This helps explain why single people, both men and women, should have the same incentives to acquire financial knowledge. In fact, Rink et al. (2021) identified it as an 'enigma' that single women tend to be less financially literate than single men. Second, another possible explanation is that because single people, both men and women, have to deal with their own finances, they learn by doing. In this regard, Filipiak and Walle (2015) assert that the learning-by-doing argument is contrary to the differences in FL between single men and women. However, this result differs from those of Bucher-Koenen et al. (2016), who found a gender gap in financial literacy even between single men and women.

A general conclusion can be drawn from this study. Unlike previous studies in which the existence of a gender gap in FL has been demonstrated, in the present study, it has been shown that this gap only occurs in the case of married women or women who live with a partner because they delegate financial decisions to their partner. The fact that there is no significant difference between men's and women's FL in single households confirms this statement. Therefore, this study helps to explain the divergences observed in previous studies in which the joint effect of gender and marital status was not considered. In addition, the results contribute to the literature analysing the joint effect of gender and marital status on financial decisions (e.g. Bertochi et al., 2011; Lei, 2019).

[2] See Stolper and Walter (2017) for a review of financial literacy and financial advice.

In the context of theory, the results support the family financial socialisation theory, since according to Payne et al. (2014), although marital relationships can have a far-reaching impact on a couple's financial experiences, fewer studies have considered that financial socialisation may occur within marriage. Moreover, novel arguments are introduced relating to the motivations to invest in financial knowledge and the role of financial advisors, which contribute to explaining the differences in FL between single women and married women or those in a long-term relationship.

Regarding the practical implications, it can be highlighted that institutions wishing to increase FL levels could target women, specifically married/couple women with low levels of education aged under 55 or over 64 as a group more likely to have a low level of FL, leading to a greater prospect of improvement. If financial institutions wish to address a segment of clients with a higher level of FL, they should focus on males aged between 55 and 64 years who are married or living with a partner and have high incomes and higher education, since these individuals are more likely to understand more complex financial products and plan their finances in the long term.

Finally, this work contributes to the study of FL in a European country, and the results can be extended to other nations with similar traditions and culture, specifically regarding the role of women in society. As several authors such as Dew et al. (2012) assert, the husband's role in financial decisions within the household stems from historical and cultural norms. Regarding culture, one of the dimensions of Hofstede's national culture model is masculinity, which measures the degree to which society reinforces the traditional male role of achievement, assertiveness, control, and power (Hofstede, 2011). Spain has a score of 42 in this dimension, similar to France (43), lower than Germany (66) and Italy (70), and much higher than Finland (26), Norway (8), and Sweden (5) (Hofstede, 2021). In this regard, most research on FL has been focused on the U.S., and there is far less evidence available for Europe (Stolper and Walter, 2017). Moreover, the cultural differences at the European level offer an opportunity to extend the study to several countries belonging to different European areas, such as north and south.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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APPENDIX

Table A1. Composition of the FL Index

Variable	FL Sub-index	ECF Question	
	Values	Code	Values
Financial knowledge sub-index	**0-5**		
Inflation	0-1	QK3	3
Simple interest	0-1	QK5	102
Compound interest	0-1	QK6	1
Profitability-Risk	0-1	QK7_1	1
Diversification	0-1	QK7_3	1
Financial Behavior Sub-index	**0-9**		
Responsible for financial decisions and budget	0-1	QF1 y QF2	QF1=1-2 & QF2= 1
Active saving	0-1	QF3	A,c,d,e,f,g
Consider purchase	0-1	QF10_1	1-2
Invoices paid on time	0-1	QF10_4	1-2
Monitor your financial affairs	0-1	QF10-6	1-2
Set a long-term financial goal	0-1	QF10-7	1-2
Choice of financial products (1)*	0-1	Qprod_D1	1 or 4
Choice of financial products (2)*	0-2	Qprod_D2	1 if= B,c,d,i,j,k,l,m,r 2 if= e,f,g,h
Need for a loan to make ends meet	0-1	QF12	1 if= a,b,c,d, -97,-98 y -99
Financial Attitude Sub-index	**1-5**		
Live up to date	1-5	QF10_2	(1-5)/3
Enjoy more spending than saving	1-5	QF10_3	(1-5)/3
Money is to be spent	1-5	QF10_8	(1-5)/3
Financial Literacy Index (FLI_19)	**1-19**		

* In the sub-index of financial behavior, within the questions referring to "choice of financial products (1) and (2) the value can be maximum 2 if it obtains in the question Qprod_D2 the score 2, otherwise, 1.

Source: own elaboration from OECD (2017) and ECF-2016

Table A2. Correlation matrix and Variance Inflation Factor (VIF)

	1	2	3	4	5	6	7	8	9	10	11	12
VIF	-	1.00	1.00	1.21	1.67	1.44	1.61	1.27	1.56	1.31	1.45	1.00
1.Fin. Literacy	1.00											
2.Women	-0.04***	1.00										
3. Married/couple	0.10***	0.00	1.00									
4.Higher studies	0.10***	-0.00	0.01	1.000								
5.Age 35-54	0.01	0.01	-0.00	0.11***	1.00							
6. Age 55-64	0.04***	0.00	0.016	-0.03***	-0.39***	1.00						
7. Age 65-79	-0.03***	-0.017	-0.01	-0.10***	-0.38***	-0.20***	1.00					
8. Self-employed	0.03***	0..01*	-0.02*	0.04***	0.12***	0.03***	-0.13***	1.00				
9.Employed	0.03***	0.00	0.02**	0.19***	0.28***	-0.04***	-0.37***	-0.29***	1.00			
10.Incomes2	0.01	0.00	-0.01	0.04***	0.02**	-0.03***	-0.03***	0.03***	0.13***	1.00		
11.Incomes3	0.08***	-0.00	-0.01	0.33***	0.07***	0.02**	-0.08***	0.06***	0.13***	-0.39***	1.00	
12.Municipality	0.02*	0.01	-0.02*	0.05***	0.02*	-0.00	-0.01	-0.02*	0.01	-0.00	0.01*	1.00

***, **, * significant at 1%, 5% and 10%, respectively

Source: own elaboration