EUROPEAN STOCKHOLDING: IS THERE A GENDER GAP?

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RESUMEN

Esta investigación analiza los determinantes individuales de la decisión de participar en el mercado de valores en ocho países europeos - Francia, Alemania, Italia, Países Bajos, Polonia, España, Suecia y el Reino Unido- sobre una muestra de 6.036 individuos con edades comprendidas entre 18 y 65 años. Los datos utilizados en el análisis empírico provienen del estudio The EU Market for Consumer Long Term Retail Saving Vehicles. Comparative Analysis of Products, Market Structure, Costs, Distribution Systems and Consumer Saving Patterns, llevado a cabo por la Comisión Europea en el año 2007. Esta investigación considera tanto variables socioeconómicas previamente analizadas en la literatura financiera referida a otros países, como nuevas variables que pueden actuar como determinantes del comportamiento y que no han sido analizados en profundidad hasta ahora. En cualquier caso, el presente estudio hace especial énfasis en el estudio de las diferencias de género. Los resultados obtenidos ponen de manifiesto que la participación de mercado de valores en los países antes mencionados se relaciona positivamente con la edad, el género masculino, la tenencia de los estudios universitarios, los ingresos, la influencia del asesoramiento financiero y la asunción de riesgos; y negativamente con la búsqueda de asesoramiento financiero y la confianza general. Además, se constata la existencia de factores institucionales que influyen en las actitudes hacia el mercado valores de quienes invierten.

PALABRAS CLAVE: DETERMINANTES, PARTICIPACIÓN, MERCADO DE VALORES, EUROPEOS, GÉNERO, FACTORES INSTITUCIONALES.

Códigos JEL: G23, G18

ABSTRACT

This research analyzes the individual determinants of the decision to participate in the stock market in eight European countries - France, Germany, Italy, the Netherlands, Poland, Spain, Sweden and the United Kingdom, on a sample of 6,036 individuals, aged between 18-65 years. The data used in the empirical analysis comes from the study "The EU Market for Consumer Long Term Retail Saving Vehicles. Comparative Analysis of Products, Market Structure, Costs, Distribution Systems and Consumer Saving Patterns", carried out by the European Commission in 2007. The main focus of this paper consists of analyzing the potential gender gap in stock market participation while it includes socioeconomic variables that have already been studied in the prior financial literature focused on other countries, as well as behavioral determinants that have not been analyzed in depth so far. The results highlight

that stock market participation in the countries above mentioned. Issues positively related to this research involves: peoples age, being male, having university studies, income, influence of financial advice and willingness to risk; and a negatively related issue is seeking of financial advice and general trust. Besides, it is important the existence of institutional country factors that influence the investors' attitudes toward stockholding.

KEYWORDS: DETERMINANTS, PARTICIPATION, STOCK MARKET, EUROPEANS, GENDER, INSTITUTIONAL FACTORS.

JEL Codes: G23, G18

INTRODUCTION

There is an extensive theoretical and empirical literature related to the decision of stock market participation. Whereas the traditional finance theory posited that individuals' willingness to take financial risks depends mainly on investment opportunities and risk aversion, recent studies in the field of behavioral finance have analyzed several new factors that may influence stock market participation (Renneboog y Spaenjers, 2012). Therefore, recent research has provided evidence into the effect of different factors such as trust (Guiso et al,. 2008; Georgarakos and Inderst, 2011), gender (Almenberg and Dreber, 2015; Christiansen et al., 2009; Van Rooij et al., 2011), financial literacy (Van Rooij et al., 2011), risk aversion (Dohmen et al., 2011; Halko et al., 2012), education (Khorunzhina, 2011; Pellicer, 2005), financial advice (Direr and Visser, 2013) and information technologies (Bogan, 2008) on stock market participation.

This paper investigates the potential gender gap with reference to the factors that are driving the stock market participation of European individuals. In particular, we firstly analyze which socio-demographic characteristics of individuals are important determinants of the decision about holding stocks, paying special attention to gender. Secondly, we ask whether men and women have the same probability and driving forces of stockholding.

Stock market participation is a relevant issue for several reasons. First of all, households are currently more involved in making financial decisions than in the past, which could be partially due to "the privatization of pension systems, the liberalization of loan markets and the recent credit expansion experienced by many developed countries" [Guiso and Sodini (2012), p. 8]. But although nowadays households have a more active role, participation rates in the market are relatively low in Europe - around 30% for the United Kingdom, 22% for Germany and at 5% for Spain- (Guiso and Sodini, 2012).

Moreover, the recent structural reforms in Social Security and pension system have shifted the responsibility and risk for financial decisions more to workers and away from government and employers (OECD, 2009; Van Rooij et al., 2011), as it reveals the shift from employer-sponsored defined-benefit (DB) plans to defined-contribution (DC) retirement plans. And finally, stock market participation may contribute to increase the savings for retirement. This has a great importance, as households are not saving enough for this purpose, while they are accumulating excessive debt, and therefore, they are not taking advantage of financial innovation (Campbell, 2006; Lusardi and Mitchell, 2007).

Stock market participation is closely connected with a variety of public policies ranging from taxation to retirement plans and financial regulation. From the point of view of financial regulation and legislation, those who hold stocks and other financial assets may have different attitudes towards corporate taxation, investment income taxation and redistribution, as compared to those who choose not to participate in the stock market (Claessens and Perotti, 2007; Sears and Funk, 1991). For instance, the fact that a large share of households has no equity market exposure played a role in the recent debate over the distributional effects of lowering the tax rate on capital gains and dividends (Friedman and Greenstein, 2003).

Individuals who emphasize conservative values of tradition, conformity and security are less likely to invest in stocks or equity funds due to their disinterest in this market (Luotonen, 2009). On the other hand, emphasis on the self-enhancement values of power and achievement increases the probability of investing in the stock market (Luotonen, 2009). Political preferences have also been suggested to be a vital factor in stock market participation. Thus, some personal values can lead to negative associations with the stock market and result in "stock market aversion" (Kaustia and Torstila, 2011).

The paper is organized as follows. Section 2 contains a brief review of previous research on stock market participation. Section 3 describes the methodology and the econometric approach, while Section 4 provides the empirical evidence found. Finally Section 5 concludes by summarizing the most important findings.

RELATED LITERATURE

In general, empirical evidence shows that women participate less than men in the stock market. This gender gap may be reduced by controlling for variables such as financial literacy, income, marital status, education and risk preferences. However, according to Christiansen et al. (2009), although in statistical terms female investors are less likely to participate in the stock market and tend to hold less risky portfolios, in

Table 1
SUMMARY OF EMPIRICAL RESEARCH RELATED TO STOCK MARKET PARTICIPATION

AUTHORS	INTEREST FOCUS	COUNTRY: UNIT OF ANALYSIS - SOURCE(YEAR)	DEPENDENT VARIABLE (MODEL)	RESULTS	
Almenberg and Dreber (2015)	Gender	Sweden: 1,300 individuals aged 18-79 years. Swedish Financial Supervisory Authority (Finansinspektionen) (2010)	Stock market participation (Probit)	Gender: female (-) Risk taking (+)	Financial literacy (+) Income (+)
Christiansen, Joensen and Rangvid (2009)	Gender	Denmark: 1,939,383 individuals aged 20-60 years. Danish Institute of Governmental Research (AKF) (1997-2003)	Stock market participation (Probit)	Gender: male (+) Married (+) No. of children (-) Financial literacy: economist (+)	Age (+) Education (+) Income (+) Wealth (+)
Halko, Kaustia and Alanko (2012)	Risk preferences and gender	Finland: 66,795 retail bank clients (2011)	Stock market participation (Probit)	Gender: female (-) Age (+) Investment knowledge (+)	Education (+) Financial risk taking (+)
Van Rooij, Lusardi and Alessie (2011)	Financial literacy	The Netherlands: 2,000 households. Dutch National Bank Household Survey (2005)	Stock market participation (OLS and a simple linear probability model, GMM)	Financial literacy (+) Little knowledge of stocks (-) Gender: female (-) Age (+)	Financially unsophisticated individuals (-) Schooling (-) Income (+) Wealth (+)
Guiso, Sapienza and Zingales (2008)	Trust	The Netherlands: 1,156 households. Dutch National Bank Household Survey (2003)	Stock market participation (Probit)	Generalized trust (+) Financial wealth (+)	Age (-) Age^2 (+) College education (+)
		Italy: 1,834 individuals. Italian Bank customers' survey (2003)	Ownership of risky assets (Probit)	High specific trust (+) Financial wealth (+) Gender: male (+)	Age (+) Age squared (-) Education (+)

Dohmen et al. (2011)	Risk preferences	Germany: 7,345 individuals participating in the labor market and not older than 66 years. German Socio-Economic Panel (2004)	Stock market participation (Probit)	Gender: female (-) Age (-) Height (+)	Parental education (+) Risk taking (+)
Bogan (2008)	Internet and information technologies	USA: 3,774 households. Health and Retirement Survey (1992-2002)	Stock market participation (Probit)	Computer usage (+) Education (+)	Income (+) Inheritance (+)
Direr and Visser (2013)	Financial advice	France: 24,375 individuals. French financial company (2004-2005)	Share of capital invested in equities (estimation method proposed by Papke and Wooldridge 1996)	Financial advisor: education (+) Financial advisor: female (-)	Age (-)
(Georgarakos and Inderst (2011)	Trust and education	Europe: 7,527 individuals. Eurobarometer Survey (2003)	Ownership of risky assets (Probit)	Specific trust: trust in financial advice (+) Consumer rights protected (+) Self-employed (+) Income (+)	Age (+) Gender: male (+) Couple (-) Divorced (-) Education: college (+)
Khorunzhina (2011)	Education and participation costs	USA: more than 1,300 households Panel Study of Income Dynamics (1999-2007)	Stock market participation (Heckman two-step estimator)	Participation in the past (+) Income (+) Wealth (+)	Age (+) Education (+) White (+)

economic terms the difference between male and female investors is slight when accounting for differences in background characteristics. But even in this case, some gender differences might remain due to cultural or social norms (Halko et al., 2012).

The following paragraphs contain the specification of the variables used at the empirical analysis as well as a brief review of the previous financial literature in stock market participation related to each variable.

AGE: the life-cycle theory of savings predicts that savings will increase over the life-cycle; the older a person gets, the more likely he/she is to save for retirement. Age tends to be strongly and positively associated with stock market participation because of the fact that income and wealth typically increase with age, and thus, the accumulation of savings increases with age up to retirement. Additionally, Constantinides et al. (2002) assert that young people do not have capital to invest in the stock market, because they cannot borrow money; and Khorunzhina (2011) highlights that age can proxy for the accumulation of information and experience. As a result, older investors will find participation in the stock market less complex owing to the mitigation of the entry costs -specially, economic and informative costs- of this financial market.

FAMILY SIZE: another common finding in the empirical literature is that family composition plays a key role. In this sense, Love (2010) points out that family shocks (i.e., changes in marital status or in the number of children) affect portfolio choice. According to family life-cycle theory of savings, the greatest possibility for saving will be enjoyed by those households that have achieved the stage of "empty nest 1"; after children are brought up and mortgages are paid off, economic resources are finally available for investing (Malroutu and Xiao, 1995). Additionally, married people are more likely to be concerned about the financial stability of their families, and thus are expected to be more likely to invest in the stock market (Christiansen et al., 2009).

However, Sundén and Surette (1998) report that investment decisions seem to be more driven by a combination of gender and marital status rather than by only gender. In this regard, single females are less likely to participate in financial markets (Bertocchi et al., 2009), while married males are unconditionally more likely to invest in stocks than married females, although married female investors are slightly more likely to hold stocks than married male investors with similar income and wealth composition (Christiansen et al., 2010). Christinasen et al. (2010) suggest that marriage has different effects for women and men. In the case of women, marriage would act as a "financial risk-increaser" whereas in the case of men it would act as a "financial risk-reducer". This could be explained by the fact that marriage fosters participation of both spouses, but in the case of women, it comes with an increase in portfolio's risk -and the opposite effect for men-.

INCOME: empirical evidence reveals that stock market participation strongly increases with income levels (Almenberg and Dreber, 2015; Ampudia, 2013; Bogan, 2008; Georgarakos and Inderst, 2011; Khorunzhina, 2011; or Van Rooij et al., 2011). Those people who enjoy greater income levels usually have more money available to invest or save; besides, greater income levels would contribute to cut down on the entry costs -transaction and information costs- in the stock market (Guiso et al., 2003), that traditionally have been pointed out by the financial literature as one of the barriers to invest in this market (Vissing-Jorgensen, 2004).). However, empirical evidence also shows, paradoxically, that a large number of individuals with above-average income levels remain outside the stock market participation (Vissing-Jorgensen, 2004). Financial literature suggests that income could be one of the factors behind the gender gap in stock market participation. Women typically have lower levels of wealth and income than men, as a direct consequence of their job profiles, characterized by lower occupation rates and lower wages than men as well as higher labor disruptions caused by their greater family responsibilities.

EDUCATION: education level is positively related to stock market participation, since empirical evidence confirms that only a small proportion of individuals with low education participate in the stock market. Thus, recent empirical studies have highlighted that individuals with higher education levels, have also higher propensity to participate in the financial market (Bogan, 2008). But how can education affect stock market participation? According to Pellicer (2005), several arguments in the literature could contribute to explain this relationship. The first one is related to the existence of financial market participation costs, which could be lessen thanks to higher education, as it was shown that education correlate positively with the ability to collect and process information (Khorunzhina, 2011) as well as with computing sophistication. The second group of arguments is mainly focused on job opportunities, as higher education tends to be associated with a better labor market outlook.

Nevertheless, empirical evidence also reports that many individuals with a university degree do not own stocks. As a result, recent studies suggest that levels of schooling are not always a good proxy for financial literacy and both variables are necessary to explain behaviour toward stocks (Van Rooij et al., 2011).

FINANCIAL LITERACY: several authors find that financial literacy has a positive effect on stock market participation (Almenberg and Dreber, 2015; Christiansen et al., 2009). Financial literacy may influence the information sources that households consult when making financial decisions. Van Rooij et al. (2011) find that individuals with low financial literacy are likely to rely on informal sources of information -family, friends and acquaintances-, whereas those who display high levels of financial literacy are more likely to rely on professional financial advisers and to seek information on the Internet, newspapers and magazines. As financial advice is an input to financial decision-making, financial literacy might lead individuals to better saving and investment decisions by enhancing the use of professional sources of information.

RISK PREFERENCES: risk aversion affects, not only portfolio composition, but the overall decision of becoming a stockholder (Laakso, 2010). Attitude toward risk-taking is in itself an important determinant of stock market participation and other important financial decisions. Standard economic theory predicts that risk-averse individuals will hold less stocks, but not desisting completely (Almenberg and Dreber, 2015). Empirical results reveal that risk-averse individuals are less likely to participate in the stock markets, and also, that the effect of some of the aforementioned factors on stock market participation may be reduced by controlling for risk preferences. In this sense, increases in age reduce willingness to take risks, but has a relatively small impact on financial matters (Halko et al., 2012). Similarly, the willingness to take risks decreases with the number of children in family (Dohmen et al., 2011). On the contrary, individuals with high income or wealth levels are more likely to take risks because they can cushion the potential impact of bad decisions. Besides the willingness to take risks increases with the education level and the experience in financial markets. With regard to gender, women are significantly less willing to take risk (Dohmen et al., 2011), even if they are familiar to it (Halko et al., 2012). It has been shown that the differences between genders grow larger in single households (Barber and Odean, 2001; Jianakoplos and Bernasek, 1998; Sundén and Surette, 1998). Women's higher risk aversion could be explained not only by their more pessimistic mentality -i.e., they consider it will be more difficult to recover from potential loses-, but also by other characteristics like their higher life expectancy, their lower level of income or their higher probabilities of becoming a single-parent family, which could justify their attitude of prudence when assuming financial risk.

TRUST: investing in stocks requires not only an assessment of the risk-return trade-off given the existing information but also trust in the fairness of stock markets. Empirical evidence suggest that stock market participation strongly increases with both general and specific trust in financial institutions (Georgarakos and Inderst, 2011; Guiso et al., 2008).

According to Guiso et al. (2008), the main advantage of the trust-based explanation is that it could explain the significant percentage of wealthy people who do not invest in stocks and how this fraction varies across countries, since explaining these differences only with the fixed costs of entry would require unrealistic levels of entry costs. Besides, the trust-based explanation supports the empirical evidence that investors tend to buy stocks of companies they are more familiar with.

It should be pointed out that differences in social backgrounds can generate considerable differences in trust levels among individuals, regions and countries (Guiso et al., 2008). Actually, Guiso et al. (2008) highlight that more educated individuals are less affected by their social background because they possess more reliable information. Similarly, Georgarakos and Inderst (2011) show that trust in advisors -financial institutions- has no significant effect on households' propensity to hold risky financial assets for those households with college education. Hence, the effect of trust in stock market participation decreases with the investor's education level and with his/her knowledge of the market.

INTERNET: according to Ampudia (2013) and Bogan (2008), the development of Internet has caused an important change in the methods by which people can invest in stock markets, fostering their participation. Thus, the online availability of stock trading, stock information and financial analysis tools has mitigated three of the proposed causes for low stock market participation, namely: transaction costs, information costs and limited access.

FINANCIAL ADVICE: professional financial advice is pervasive (Georgarakos and Inderst, 2011). In view of the high complexity of the decision of stockholding, investors are prone to follow outside advice and to be influenced by financial experts. However, although many households may use advisors or other intermediaries, they may widely differ in the extent to which an advisor's recommendations actually influence their decisions (Georgarakos and Inderst, 2011). Additio-

nally, investors' participation in the stock market could be influenced not only by the existence of financial advice but also by advisors' characteristics. In fact, Direr and Visser (2013) find that advisors with high levels of education or male advisors sell riskier portfolio allocations.

SAMPLE AND VARIABLES

In this paper, the data used for the analysis are from the study "The EU Market for Consumer Long Term Retail Savings Vehicles. Comparative Analysis of Products, Market Structure, Costs, Distribution Systems and Consumer Saving Patterns", sponsored by the European Commission and conducted by the BME Consulting. Data collection was carried out in 2007 using *Computer-Assisted Telephone Interviewing* (CATI) and a structured questionnaire.

The universe of the present research was made of general individuals aged 18-65 years. Specifically, a sample of 8,044 individuals was selected to be representative of all investors in the eight European countries analyzed, namely France, Germany, Italy, the Netherlands, Poland, Spain, Sweden and the United Kingdom. However, due to missing information on monthly net household income, 2,008 observations were dropped from the initial sample, resulting in a sample size of 6,036 observations. Table 2 shows the technical information of the survey.

Table 2
TECHNICAL INFORMATION OF THE STUDY

Universe	Individuals aged 18-65 years
Information collection	Telephone interviews (CATI) using a structured questionnaire.
Sample selection	Multi-stage sampling. In the first stage, households were considered as the sampling unit, whereas in the second stage individuals were the sampling unit.
Sample size	8,044 interviews. The sample distribution is as follows: France (1,002), Germany (1,011), Italy (1,001), the Netherlands (1,002), Poland (1,010), Spain (1,000), Sweden (1,018) and the United Kingdom (1,000).
Sampling error	The sampling error for the sample as a whole is ±1.1% for a confidence level of 95.5% and assuming p=q=0.5
Fieldwork dates	From July 2007 until August 2007

According to Almenberg and Dreber (2015), we use a standard measure of stock market participation as a dependent variable. This variable includes direct stock market participation through ownership of stocks and/or indirect participation through ownership of shares in mutual funds. Stock market participation through pension plans is excluded because it focuses on funding the retirement, and therefore, it could bias the results.

As independent variables, we have selected a number of factors -mentioned above- that presumably influence stock market participation of European individuals. Table 3 contains detailed information on the definitions of these variables, as well as, drawing on previous evidence, their expected sign or prediction.

Table 3
DEFINITIONS OF THE VARIABLES AND PREDICTIONS

Factor	Variable	Prediction	Definition
STOCK MARKET PARTICIPATION	SMP		Whether or not respondents own shares directly and/or indirectly through mutual funds
GENDER	Male	+	Whether or not respondent is male (1 or 0)
AGE	Age	+	Respondent's age
	Age^2	-	Respondent's age squared
FORMAL EDUCATION	Univ	+	Whether or not respondent has a . . .University degree (1 or 0)
	Second	+	...Secondary degree (1 or 0)
	Prim	Reference group	. . .Primary degree (1 or 0)
FAMILY SIZE	Fam_Size	-	Number of family members
	1p_household	-	Whether or not respondent constitutes a one-person household (1 or 0)
INCOME	Income	+	Logarithm (Individual monthly net household income / Average monthly net income of private households of the individual's country)
COUNTRY	France, Germany, Italy, Netherlands, Poland, Spain, Sweden, United Kingdom	Reference group: the Netherlands	Whether or not respondent is French (1 or 0)/ German (1 or 0)/ Italian (1 or 0)/ Dutch (1 or 0)/ Polish (1 or 0)/ Spanish (1 or 0)/ Swedish (1 or 0)/ British (1 or 0)
INTERNET	Internet	+	Whether or not respondents used or would use Internet to participate in the stock market, purchasing any of the following products: bank deposits, bonds and public debt, pension funds or insurance (1 or 0)
FINANCIAL LITERACY	Fin_literacy	+	Whether or not respondent knows at least four of the following six financial products: bank deposits, bonds and public debt, shares, collective investment funds, pension funds and insurance (1 or 0)
RISK	Risk taking	+	Whether or not respondents are willing to take risk purchasing some financial products if they had to invest. Willingness to take risks in the stock market is considered when respondents are willing to buy collective investment funds or shares (1 or 0)
TRUST	Special trust	+	Whether or not respondents have confidence in the considered financial institutions (1 or 0).
	General trust	-	Whether or not respondent lost the trust by having or knowing any bad experience with financial products (1 or 0).
FIN_EXP	Financial experience	+	Whether or not respondents have experience on saving (1 or 0)
FIN_ADVICE	Seek financial advice	+	Whether or not respondents sought advice when they had to purchase any financial product focused on saving (1 or 0)
	Professional financial advice	+	Whether or not respondents prefer to gather information about financial products from any of the following sources: financial institution you usually work with, other financial institutions, independent financial advisor, the market regulator or the supervisor, Internet or financial press (1 or 0)
	Influence of financial advice	+	Whether or not respondents take the decision to invest, to recognize his/her needs or to choose between products after the information gotten from the financial adviser (1 or 0)

Most of the independent variables, which were recoded from the original questionnaire, have a dichotomous nature; the remaining ones -age, age^2 and income-, have a continuous nature. Age^2 variable, that represents the squared age of respondent, was included in order to capture potential non-linearities.

ANALYSIS OF THE DECISION OF STOCK MARKET PARTICIPATION

METHODOLOGY AND DESCRIPTIVE ANALYSIS

Most of the empirical studies test the hypothesis established in the theoretical framework by means of conditional likelihood models. Therefore, in order to analyze the decision of stockholding in this research, we use a probit model, that establishes a non-linear relation between a dummy dependent variable and a set of independent variables. The following relation was proposed:

$$\text{Probability}(Y_i = 1) = \varphi(\beta_0 + \beta_1 \text{Age}_i + \beta_2 \text{Agesquared}_i + \beta_3 \text{Univ}_i + \beta_4 \text{Sec}_i + \beta_5 \text{Fin\_literacy}_i$$

$$\beta_6 \text{Fam\_Size}_i + \beta_7 1\text{p\_household}_i + \beta_8 \text{Income}_i + \beta_9 \text{General\_trust}_i + \beta_{10} \text{Special\_trust}_i + \beta_{11} \text{Seek\_financial\_advice}_i +$$

$$\text{Influence\_financial\_adivce}_i + + \beta_{13} \text{Professional\_financial\_advice}_i + \beta_{14} \text{Risk\_taking}_i + \beta_{15} \text{Male}_i + \sum_{j=16}^{22} \beta_j \ \text{Country}_i)$$

The dependent variable (Yi) quantifies the individual probability of stockholding; ***i*** is the index of individuals and φ denotes the standard normal distribution function. The equation includes seven country dummy variables, whose index is ***j***, in order to capture idiosyncratic cultural or institutional factors for each country (France, Germany, Italy, the Netherlands, Poland, Spain, Sweden and the United Kingdom). Netherlands dummy variable was omitted to avoid perfect multicollinearity, so that the institutional country effects must be interpreted in relation to the Dutch country.

Summary statistics of selected dependent and independent variables -by total and by country- were displayed in Table 4.

Table 4
SUMMARY STATISTICS OF THE VARIABLES BY COUNTRY.

	Europe	France	Germany	Italy	Netherlands	Poland	Spain	Sweden	U.K.
Observations	6,036	801	812	754	682	787	698	740	762
Male	47.90%	50.93%	49.51%	51.06%	41.20%	40.66%	51.00%	51.76%	46.71%
Age	40.2	44.5	45.3	43.7	40.2	29.9	35.1	44.3	37.9
Age²	1791.5	2165.9	2215.2	2079.5	1766.6	1022.3	1334.6	2119.4	1578.5
Education: university	37.67%	46.07%	29.43%	56.10%	12.90%	38.63%	49.71%	34.32%	32.80%
Education: secondary	57.42%	48.56%	65.39%	36.47%	84.02%	59.72%	42.41%	61.76%	62.34%
Education: primary	2.83%	4.12%	3.45%	3.45%	1.61%	1.65%	6.30%	1.62%	0.52%
Family size	2.74	2.62	2.29	3.03	2.55	3.17	2.88	2.47	2.92
One-person household	18.82%	17.35%	26.60%	12.20%	25.51%	11.44%	11.17%	28.65%	17.72%
Income	1.77	1.49	1.33	1.43	1.14	4.16	1.77	1.72	1.02
Special trust (high secure)	76.39%	82.65%	83.25%	68.30%	59.82%	96.70%	91.12%	77.57%	49.74%
General trust (by experience)	71.06%	74.78%	60.59%	68.97%	74.34%	74.97%	63.47%	72.97%	78.48%
Financial experience	76.66%	86.14%	79.43%	74.40%	80.06%	67.34%	83.81%	78.38%	64.30%

Seek financial advice	58.52%	63.30%	68.97%	67.37%	53.52%	36.47%	68.34%	52.43%	57.74%
Being deeply influenced by financial advice	68.51%	74.8%	58.0%	71.2%	53.8%	74.7%	74.4%	69.5%	70.9%
Professional financial advice	68.01%	72.16%	77.09%	69.89%	52.20%	59.97%	76.65%	67.43%	67.19%
Risk taking	30.53%	21.7%	41.3%	31.3%	10.7%	43.2%	41.1%	29.7%	23.4%
Internet	27.97%	18.5%	19.1%	19.2%	26.8%	34.3%	23.4%	53.5%	29.9%
Financial literacy	70.43%	70.2%	71.7%	69.2%	68.9%	71.9%	72.3%	71.4%	67.7%
Stock market participation	30.72%	32.5%	38.1%	34.2%	16.3%	23.9%	36.1%	40.3%	23.4%

Notes: Europe refers to the eight European countries of the sample. Income variable is not in logs. Dichotomous variables show the percentage of people that satisfy the condition under which the value of the variables equals one.

The average age of the sample ranges from a minimum of 29.9 in Poland to a maximum of 45.3 in Germany, but the average age for the eight countries of the study was 40.2 years. 47.9% of participants in the study were male, who were in a minority, as it happened in Germany, the Netherlands, Poland and the United Kingdom.

Regarding education, most of the sample achieved a secondary degree (57.42%). Only for Italy and Spain the University degree represented the higher education level achieved by most of their samples. The average family size was 2.74 people and the percentage of respondents who constituted a one-person household was 18.82%. While the country's figures for the first variable -family size- are very similar, they present a higher variation in the case of the second one -single households-.

The monthly net household income of the individuals in the sample was higher than the average for their country (1.77). Besides, more than 40% of participants have monthly household income ranging from 1,500 to 3,000€.

While 76.66% of the sample had some previous financial experience in saving, only 30.72% had participated in the stock market -directly or indirectly-. Stock market participation has its highest level in Sweden (40.3%) and its lowest level in the Netherlands (16.3%).

In relation to financial literacy, the results show that 70.43% of survey respondents knew at least four of the six financial products mentioned in the questionnaire, which evidences that they were financially literate. In particular, 87.86% of individuals were familiar with bank deposits, 48.62% with bonds, 78% with shares, 57.84% with collective investment funds, 73.19% with pension funds and 82.80% of individuals had an idea about insurance.

71.06 % of participants had some kind of negative experience or knew someone who had. Analyzing the participants' specific trust, or the trust in financial institutions, we can conclude that 76.39% of participants trusted one of the financial institutions proposed as a safe place to invest or keep their capital. Specifically, most participants (38.2%) believed that commercial banks can guarantee the highest security for customers' savings. Only 23.6% of participants did not trust any listed financial institution.

Regarding financial advice, 58.52% of participants sought financial advice when purchasing an investment product. In fact, 68.51% of participants were influenced by the information received regarding the investment, the recognition of their needs or the choice between products.

The source of financial advice plays a significant role. Therefore, it is important to seek professional advice and to have clear and objective

information about financial products. Actually, 68.01% of participants use professional sources to get information about financial products of their choice.

While information technologies grow and become widespread, a lot of people purchase online many kinds of financial products using Internet and information technologies. Thus, nearly 28% of participants used or would use Internet to purchase any of the listed financial products (see Table 3). It is worth mentioning the high percentage of Sweden, where 53.5% of the sample used or was willing to use the Internet to participate in the financial market.

In general, 30.53% of participants are willing to take some financial risks.

DETERMINANTS OF STOCK MARKET PARTICIPATION

Firstly, we analyze the driving forces of Europeans' decision of stockholding. In order to do that, we estimate six different (nested) empirical models (Tables 5 and 6). Whereas Model 1 includes all the independent variables defined in the previous section, the remaining models exclude some of them in order to reduce potential problems of multicollinearity, given the high correlation found between some of the variables.

As is displayed in Tables 5 and 6, some variables are significant in all the estimated models. The results are discussed below.

Table 5
PROBIT ESTIMATES OF THE LIKELIHOOD OF INVESTING IN THE STOCK MARKET.

	Model 1	Model 2	Model 3
Male	0.044***	0.044***	0.045***
	(0.011)	(0.011)	(0.011)
Age	0.009**	0.009**	0.010**
	(0.003)	(0.003)	(0.003)
Age^2	-0.000*	-0.000*	-0.000*
	0.000	0.000	0.000
Fam_size	-0.004		-0.006
	(0.005)		(0.005)
1p_household	0.001	0.009	0.005
	(0.018)	(0.015)	(0.018)
Univ	0.108***	0.110***	
	(0.029)	(0.029)	
Second	0.034	0.035	
	(0.027)	(0.026)	
Income	0.116***	0.116***	0.132***
	(0.013)	(0.013)	(0.013)
Fin_literacy	0.002	0.002	0.002
	(0.010)	(0.010)	(0.010)
Special trust	0.013	0.014	0.013
	(0.014)	(0.014)	(0.014)
General trust	-0.023	-0.023	-0.028*
	(0.012)	(0.012)	(0.012)
Internet	0.004	0.005	0.005
	(0.012)	(0.012)	(0.012)
Seek financial advice	-0.038***	-0.039***	-0.041***
	(0.011)	(0.011)	(0.011)
Influence of financial advice	0.085***	0.085***	0.087***
	(0.012)	(0.012)	(0.012)
Professional financial advice	0.011	0.011	0.011
	(0.012)	(0.012)	(0.012)
Risk taking	0.293***	0.293***	0.298***
	(0.013)	(0.013)	(0.013)
Spain	0.035	0.036	0.056*
	(0.026)	(0.026)	(0.027)
France	0.062*	0.062*	0.083***
	(0.025)	(0.025)	(0.025)
Italy	0.058*	0.057*	0.088***
	(0.025)	(0.025)	(0.025)
United Kingdom	0.049	0.048	0.069**
	(0.025)	(0.025)	(0.025)

Germany	0.094***	0.095***	0.103***
	(0.025)	(0.025)	(0.025)
Sweden	0.103***	0.103***	0.112***
	(0.026)	(0.026)	(0.026)
Poland	-0.153***	-0.154***	-0.153***
	(0.023)	(0.023)	(0.023)
Obs.	6019	6019	6019
Wald χ^2(d.f.)	1027.45*** (23)	1027.68*** (22)	990.78*** (21)
R^2 Mcfadden	0.15	0.15	0.15
Pseudolikelihood	-3140.89	-3141.25	-3162.15
Akaike criterion (d.f.)	6329.8(24)	6328.5(23)	6368.3(22)
Hosmer-Lemeshow χ^2 (8 d.f.)	4.23	3.03	10.15

Notes: table 5 shows *Average Partial Effects* (APEs). The Stata margeff command was used to calculate the APEs. ***, **, * denotes significance at the 0.001, 0.01 and 0.05, respectively. Robust standard errors are in parentheses. d.f. denotes degrees of freedom.

Table 6
PROBIT ESTIMATES OF THE LIKELIHOOD OF INVESTING IN THE STOCK MARKET.

	Model 4	Model 5	Model 6
Male	0.044***	0.045***	0.047***
	(0.011)	(0.011)	(0.011)
Age	0.009**	0.009**	0.009**
	(0.003)	(0.003)	(0.003)
Age^2	-0.000*	-0.000*	-0.000*
	0.000	0.000	0.000
Fam_size	-0.004	-0.005	-0.005
	(0.005)	(0.005)	(0.005)
1p_household	0.002	-0.004	-0.006
	(0.018)	(0.018)	(0.018)
Univ	0.104***	0.111***	0.112***
	(0.029)	(0.029)	(0.029)
Second	0.031	0.034	0.035
	(0.026)	(0.027)	(0.027)
Income	0.116***	0.121***	0.120***
	(0.013)	(0.013)	(0.013)
Fin_literacy		0.001	0.001
		(0.010)	(0.010)
Special trust	0.013	0.017	0.015
	(0.014)	(0.014)	(0.014)
General trust	-0.023	-0.027*	-0.027*
	(0.012)	(0.012)	(0.012)
Internet	0.004	0.005	0.008
	(0.012)	(0.012)	(0.012)
Seek financial advice	-0.039***	-0.030**	
	(0.011)	(0.011)	
Influence of financial advice	0.085***		
	(0.012)		
Professional financial advice	0.012		0.008
	(0.012)		(0.012)
Risk taking	0.292***	0.300***	0.299***
	(0.013)	(0.013)	(0.013)
Spain	0.037	0.048	0.042
	(0.026)	(0.026)	(0.026)
France	0.062*	0.075**	0.070**
	(0.025)	(0.025)	(0.025)
Italy	0.059*	0.069**	0.062*
	(0.025)	(0.025)	(0.025)
United Kingdom	0.049	0.065*	0.062*
	(0.025)	(0.025)	(0.025)
Germany	0.096***	0.091***	0.085***
	(0.025)	(0.025)	(0.025)
Sweden	0.104***	0.112***	0.111***
	(0.026)	(0.026)	(0.026)
Poland	-0.152***	-0.147***	-0.142***
	(0.023)	(0.023)	(0.024)
Obs.	6036	6019	6019
Wald χ^2(d.f.)	1028.84*** (22)	990.80*** (21)	987.66*** (21)
R^2 Mcfadden	0.15	0.15	0.15
Pseudolikelihood	-3149.61	-3166.96	-3170.28
Akaike criterion (d.f.)	6345.2(23)	6377.9(22)	6384.5(22)
Hosmer-Lemeshow χ^2 (8 d.f.)	3.96	4.78	6.92

Notes: table 6 shows *Average Partial Effects* (APEs). The Stata margeff command was used to calculate the APEs. ***, **, * denotes significance at the 0.001, 0.01 and 0.05, respectively. Robust standard errors are in parentheses. d.f. denotes degrees of freedom.

Our results suggest that men are more likely than women to participate in the stock markets. Actually, empirical evidence suggests that men have almost 5 percent higher probability of stockholding. Our results are consistent with the findings of Almenberg and Dreber (2015), Christiansen et al. (2009), Dohmen et al. (2011), Georgarakos and Inderst (2011), Guiso et al. (2008), Halko et al. (2012) and Van Rooij et al. (2011).

The life-cycle hypothesis of savings is partially supported. Age is strongly and positively associated with the decision of stockholding, which could be due to the fact that income -and therefore, the money available to invest in the financial market- increases with age up to retirement. Moreover, the results suggest that the probability of stockholding in relation to age follows an inverted U-shaped function. These results are consistent with the findings of Christiansen et al. (2009), Georgarakos and Inderst (2011), Guiso et al. (2008), Halko et al. (2012), Khorunzhina (2011) and Van Rooij et al. (2011). On the contrary, family size variables (Fam_Size and 1p_household) fail to be significant for the estimated models, differing our results from the ones of Christiansen et al. (2010).

The monthly net household income seems to be significant. Thus, the average partial effects indicate that a 1 percent increase in the income variable would increase the probability of stockholding by almost 12 percent. These results are consistent with the findings of Almenberg and Dreber (2015), Bogan (2008), Christiansen et al. (2009), Georgarakos and Inderst (2011), Guiso et al. (2008), Khorunzhina (2011), Pellicer (2005) and Van Rooij et al. (2011).

As we expected, education is strongly and positively associated with stock market participation. Particularly, the results suggest that individuals with university degrees have 10 percent higher probability of stockholding. These results are consistent with the findings of Bogan (2008), Christiansen et al. (2009), Georgarakos and Inderst (2011), Guiso et al. (2008), Halko et al. (2012), Khorunzhina (2011), Pellicer (2005) and Van Rooij et al. (2011). Therefore, our results support the arguments proposed by Pellicer (2005) when explaining how education affects stock market participation. On the one hand, the high correlation between the variables Univ and Professional financial advice seems to indicate that individuals who display higher education levels are more likely to rely on professional sources of financial information. On the other hand, the high correlation between the variables Univ and Income and Risk taking suggests that better educated individuals have higher expected future labor income and perceive lower future labor income variability, which enhances them to take more risks.

On the contrary, financial literacy fails to be significant for the estimated models. These results are contrary to the findings of Almenberg and Dreber (2015), Christiansen et al. (2009), Halko et al. (2012) and Van Rooij et al. (2011). Most of these papers used similar measures of financial literacy, designed according to modules of the Health and Retirement Survey (HRS) from United States. In our sample, the significant and negative correlation found between Fin_literacy and Professional financial advice variables, as well as the lack of significance of the estimated coefficients suggest that the proposed variable is not a good proxy for financial literacy.

As we expected, risk preferences are strongly and positively associated with stock market participation. Particularly, the results suggest that less risk-averse individuals have nearly 29 percent higher probability of stockholding. These results are consistent with the findings of Almenberg and Dreber (2015), Dohmen et al. (2011) and Halko et al. (2012).

General trust is significant in three of the estimated models. These results are consistent with the findings of Georgarakos and Inderst (2011) and

Guiso et al. (2008). Particularly, the results suggest that individuals who know someone who has been deliberately misled to buy a particular saving product have 2.7 percent lower probability of stockholding. On the contrary, specific trust is not significant for the estimated models.

Internet also fails to be significant, contrary to the empirical evidence found in the investigations of Ampudia (2013) or Bogan (2008), who emphasize the saving of money and time that Internet brings to the stock market participants. On the other hand, the results related to the use of advice are rather confusing. Whereas those individuals who seek financial advice have around 3.8 percent lower probability of stockholding, those who are deeply influenced by the information received have 8.5 percent higher probability of holding stocks. Additionally, the use of professional financial advice has no effect on stock market participation.

Finally, empirical evidence reveals that the country also matters in the decision of stockholding. Thus, Tables 5 and 6 show the results for the seven country dummy variables introduced in the models. It is observed that five of the country dummy variables (France, Italy, Germany, Sweden and Poland) are highly significant, which confirms that, in addition to the individual characteristics, institutional country factors also affect investor's attitudes towards stockholding. In this sense, the average partial effects of the country dummies imply that, relative to Dutch (omitted group), French and Italian are about 6 percent more likely to participate in stock markets while Swedish and German are about 10 percent. On the contrary, living in Poland has a negative effect on stockholding. In fact, figures reveal that, relative to Dutch (omitted group), Polish are about 15 percent less likely to participate in the stock market.

To sum up, the decision to participate in the stock market is positively related to age, having university studies, household income, being deeply influenced by financial advice, and being prone to take financial risk, and negatively related to age squared, seeking financial advice and lack of generalized trust. Finally, in addition to the individual characteristics, institutional country factors also affect the investor's attitudes towards stockholding.

The previous outcome indicates that gender matters in the decisions of holding stocks. Moreover, as it can be seen in Table 7 -that compares means across the gender subsamples-, the variables with statistically differences in means are: stock market participation, age, university studies, income, trust and financial advice variables, and risk attitude. Thus, women decide to hold stocks (25.3 percent), even though in a lower extent than men (36.6 percent). Similarly, a look into the descriptive statistics by gender reveals that the women of the sample are younger, have lower levels of education and household income and are more risk averse than men. Women show a higher lack of generalized trust and a lower confidence in financial institutions. As a result, they are less influenced by financial advisors and use professional sources of financial information in a lower extent than men.

Table 7
SUMMARY STATISTICS BY GENDER (MEANS)

	Female	Male	Differences
Stock market participation	25.3%	36.6%	-11.35***
Age	38.4	42.1	-3.73***
Agesquared	1636.5	1960.2	
Fam_Size	2.735	2.746	-0.011
1p_household	18.2%	19.5%	-1.4%
Univ	35.5%	40.0%	-4.4%**
Second	59.1%	55.6%	3.5%
Income	1.753	1.791	-0.038***
Fin_literacy	71.3%	71.5%	-0.2%
Special trust	74.4%	78.6%	-4.2%***
General trust	74.5%	67.3%	7.1%***
Internet	27.1%	28.9%	-1.8%
Seek financial advice	59.8%	57.1%	2.6%
Influence of financial advice	67.2%	70.0%	-2.8%**
Professional financial advice	66.2%	70.0%	-3.8%**
Risk taking	25.2%	36.3%	-11.0%***

Notes: statistical significance of the difference in means between males and females is denoted by ***, **, * at the 0.001, 0.01 and 0.05 level, respectively. Income variable is not in logs.

Male variable is a crude way to capture gender differences. Therefore, in order to investigate whether gender differences influence the driving forces of the Europeans' stock market participation, we follow one alternative strategy, re-running the Model 1 by dividing the data into the two subsamples (Table 8).

In general, driving forces of stockholding are practically the same for both women and men, although we found some gender differences. Men' decision seems to be affected to a higher degree by the age and the search of financial advice. On the contrary, women' decision seems to be more affected by general trust.

In spite of these results, it seems that differences in stockholding are more likely to reflect differences in country-level institutional factors rather than gender. Since the results of the global models (Tables 5 and 6) showed weaker associations for the gender variable than country-level institutional factors, and the former estimates became attenuated to non-significance after interacting gender with country variables, it seems that differences in the decision to hold stocks are more likely to reflect a combination of country-level institutional factors and gender, rather than gender or country alone. Thus, further research is required to know whether the existence of some institutional reasons might explain the independent gender effect in these countries.

Table 8
AVERAGE PARTIAL EFFECTS (BY GENDER)

	FEMALE	MALE
Age	0.007	0.011*
	(0.00)	(0.01)
Agesquared	0	0
	0.00	0.00
Fam_Size	-0.005	-0.002
	(0.01)	(0.01)
p1_household	0.01	-0.008
	(0.02	(0.03)
Univ	0.085*	0.139**
	(0.04)	(0.04)
Second	0.021	0.053
	(0.03)	(0.04)
Income	0.125***	0.108***
	(0.02)	(0.02)
Fin_literacy	0.01	-0.005
	(0.01)	(0.01)
Special trust	0.005	0.019
	(0.02)	(0.02)
General trust	-0.038*	-0.009
	(0.02)	(0.02)
Internet	-0.016	0.022
	(0.02)	(0.02)
Seek financial advice	-0.022	-0.058***
	(0.02)	(0.02)
Influence of financial advice	0.086***	0.085***
	(0.02)	(0.02)
Professional financial advice	-0.002	0.024
	(0.02)	(0.02)
Risk taking	0.256***	0.324***
	(0.02)	(0.02)
Spain	0.069	0.002
	(0.04)	(0.04)
France	0.072*	0.051
	(0.04)	(0.04)
Italy	0.097**	0.019
	(0.04)	(0.04)

United Kingdom	0.066	0.032
	(0.04)	(0.04)
Germany	0.134***	0.06
	(0.04)	(0.04)
Sweden	0.153***	0.055
	(0.04)	(0.04)
Poland	-0.139***	-0.166***
	(0.03)	(0.04)
Obs.	3135	2884
Wald χ^2(d.f.)	481.75*** (22)	488.82*** (22)
R^2 Mcfadden	0.15	0.14
Pseudolikelihood	-1503.74	-1626.49
Akaike criterion (d.f.)	3053.47 (23)	3298.99 (23)
Hosmer-Lemeshow χ^2 (8 d.f.)	5.01	4.32

Notes: table 8 shows Average Partial Effects (APE's). As noted by Bartus (2005), APEs provide a more realistic interpretation of the estimation results and more consistent estimates than marginal effects at the mean. The Stata margeff command was used to calculate the APEs. ***, **, * denotes significance at the 0.001, 0.01 and 0.05, respectively. Robust standard errors are in parentheses. d.f. denotes degrees of freedom.

CONCLUSIONS

Stock market participation is not a novel topic in the financial literature, since there has been an extensive research on this subject, especially due to the persistence of low levels of participation in many developed countries. It seems that stock markets have not benefited from the technological and financial advances that have taken place in the last decade.

Recent studies in the field of behavioral finance have analyzed several new factors that may influence stock market participation. This paper, following these latest developments, has investigated the determinants of stock market participation in Europe, paying special attention to the gender variable. The empirical analysis consists of a sample of 6,036 individuals from eight European countries -France, Germany, Italy, the Netherlands, Poland, Spain, Sweden and the United Kingdom-.

Empirical evidence from this sample showed that socio-demographic characteristics are important determinants of the decision of holding stocks. In particular, stock market participation is positively related to age, having university studies, household income, being deeply influenced by financial advice, and being less risky averse. Moreover, it is negatively related to age squared, seeking financial advice, and lack of general trust.

The existence of a gender gap in stockholding reveals the need of attenuating these potential inequalities between genders. In several countries, the onus for retirement planning is inevitably shifting towards private savings to supplement the necessary minimum provided by public pension schemes (European Commission, 2007). Therefore, as many private saving plans involve an indirect participation in the stock market, it would be primordial to cut down the gender gap in stockholding.

Finally, it was found that institutional country factors also affect the investor's attitudes towards stockholding.

Our findings provide quantitative evidence on the determinants of stock market participation attitudes, thus reinforcing previous literature. Moreover, the geographical focus of study constitutes a relevant contribution to the financial literature, as most of the previous studies are more focused on Anglo-Saxon countries. However, this paper also presents some limitations that could open the way for further research. Namely, our results are based on cross-section data that show different people at the same moment. Although it is tempting to draw conclusions about how the decision of stock market participation varies over the life-cycle based on these results, this would not be totally correct. Therefore, future research on this topic might benefit from collecting data with a longitudinal nature.

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