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Andrea Kroon

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Andrea Kroon*

S2402130 - MSc. Finance - University of Groningen

ABSTRACT

Previous literature identified that family structure experienced during childhood plays an important role in individuals' risk preferences later in life. This paper investigates, by using a probit regression, whether the number of siblings and parental composition affect the decision to participate either directly or indirectly in the stock market. The effect of these childhood characteristics on the amount invested in the stock market, conditional on the participation decision, has been modeled by a Tobit regression. The same regressions are conducted for the bond market. The data has been obtained from the Survey of Health, Ageing and Retirement in Europe (SHARE). The results show that the number of siblings is negatively related to the decision to invest and to the amount invested in stocks and bonds. Furthermore, children raised in families containing at least one stepparent are less likely to invest and invest a lower amount in the bond market. Last mentioned proposition also holds for children raised by single parents when considering the participation decision in the total bond market. The results are robust for the inclusion of gifts and inheritances and for changes in the calculation of indirect stock- and bondholdings.

Field Key Words: Family structure, portfolio composition, childhood

JEL Classifications: D91, G11, J12, J13

Supervisor: Dr. V. Angelini**
Faculty of Economics & Business
University of Groningen

* *Corresponding author: Andrea Kroon, Jozef Israëlsplein 6a, 9718EN Groningen, +31630014884, c.a.kroon@student.rug.nl*
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1. INTRODUCTION

Individual decisions whether to invest in financial assets and how to compose a portfolio have widely been examined in the last decades (e.g. Cohn et al., 1975; King and Leape, 1984; Pålsson, 1996; Guiso, Haliassos, and Jappelli, 2003; Berkowitz and Qiu, 2006) and the topic remained subject to research in recent years (e.g. Brown et al., 2016; Fagereng, Gottlieb, and Guiso, 2017). The most important classes of investments in financial assets in a portfolio are stocks and bonds. As is well-known, stocks are in general more risky investments than bonds. A large body of portfolio decision theory exists on how individuals' risk preferences and resulting optimal asset allocation depend on their main demographic and financial characteristics. This existing literature includes for example Van Rooij, Lusardi, and Alessie (2011) who show that individuals with low financial literacy are less likely to invest in stocks, Rosen and Wu (2004) who show that households in poor health are less likely to hold risky financial assets and Christelis, Jappelli, and Padula (2010) who have found that the decision to invest in stocks is strongly associated with cognitive abilities.

Besides these individual characteristics that influence financial portfolio decisions in the short-term, economists are recently becoming increasingly aware of long-run characteristics influencing financial risk taking, focusing on the critical role that childhood plays in conditioning success in adulthood. One of the papers contributing to this literature by Christelis, Dobrescu, and Motta (2012) studies the impact of early life conditions on financial risk-taking later in life using the Survey of Health, Aging and Retirement in Europe (SHARE). They have found that superior cognitive abilities and socio-economic status in childhood increase the fraction of risky financial assets held when grown-up. Charles and Hurst (2003) found, using the US-based Panel Study of Income Dynamics (PSID), that children with wealthy-living parents have a higher probability of investing in risky financial assets later in life. Besides that, they found that parents and children often exhibit similar preferences for risk. Hanushek and Woessmann (2008) found that an individual's prior life experiences, such as experiencing a difficult childhood, may lead to altered risk preferences during adulthood.

Hill, Yeung, and Duncan (2003) state, also using data from the PSID, that a large part of childhood experiences are related to family structure, and that these childhood experiences might be particularly forming and influence decisions later in life. Kessler (1991) used family size during childhood to explain variation in achievement during adulthood, in which

achievement was measured by employment status. He found that women being raised in small families are less likely to be employed when matured than women that are raised in larger families. Besides that, family size, and more specifically the number of siblings, are found to be associated with the tendency to engage in risky behavior (Wang, Kruger, and Wilke, 2009; Calvet and Sodini, 2014). Furthermore, Hartup (1979) argues that parent-child relations produce an emotional and instrumental base from which children can explore the wider social world. Parents are important in the formation of their children's perceptions of risk and trust. Hence, both siblings and parents are able to fundamentally change a child's tendency in making financial portfolio decisions (Dohmen et al., 2006).

The previous literature suggests that the family structure during the childhood of individuals, characterized by the siblings and parents living in the household, may be an important driver of risk appetite and the consequent financial portfolio decisions later in life. This leads to the following research question:

What is the impact of the family structure experienced in one's childhood on the financial portfolio decisions made later in life?

The aim of this paper is to move deeper into the analysis of the association between family structure and financial risk preferences. More specifically, this study has been designed to test the association between the number of siblings and parental composition during childhood and the investment in risky assets later in life. In order to investigate these underlying characteristics experienced during childhood that determine financial portfolio decisions, data from the third wave and fourth wave of the Survey of Health, Ageing and Retirement in Europe (SHARE) have been used. This rich dataset asks, amongst others, detailed questions on demographics, income, financial assets and family structure to people aged 50 and older from European countries. Wave 3 (SHARELIFE) has a different focus than the regular waves; it contains all important areas of respondents' life histories and covers their childhood conditions (see Börsch-Supan, 2016, for further information). Using this data, it has been found that the number of siblings negatively affects the decision to invest and the amount invested in both stocks and bonds. Furthermore, children raised by at least one stepparent are less inclined to invest in the bond market and also significantly invest a lower amount in the bond market. When taking account of both direct and indirect investments, children raised in single parent households are less likely to invest in the bond market later in life.

This paper contributes empirically to the existing literature in three ways. First, a long-term effect on portfolio decisions has been analyzed. Long-term effects on financial asset decisions are recently gaining interest, whereas most short-term effects are already widely exploited in the existing literature. Second, in previous research, the association between family structure variables and financial portfolio decisions has mainly been analyzed by investigating only the amount of financial assets held. In this paper, both the decision to participate in the stock and bond market as well as the amounts invested in these financial assets are accounted for. Third, this paper uses a large European survey, whereas most previous literature focused mainly on American or country-specific datasets.

The remainder of this paper is structured as follows. Section 2 provides an overview of the existing literature on the different dimensions of family structure and their influences on risk preferences and portfolio decisions. The research methodology is discussed in Section 3, after which the data has been described in Section 4. In Section 5 the results are presented and in Section 6 two robustness checks are performed. Finally, Section 7 concludes and provides limitations and suggestions for further research.

2. LITERATURE REVIEW

The next two subsections will examine the studied family structure variables and describe how they are linked in the existing literature to a wide variety of personality and behavioral outcomes.

2.1 Number of siblings

Personality development can to a great extent be determined by the powerful interpersonal dynamics in families. Family size and in particular the number of siblings one has, influences the personality traits an individual develops. Members of large families tend to provide practice in learning social skills and taking others' views and needs into account, whereas members of small families are more autonomous and score on average higher on IQ-tests (Blake, 1991).

However, literature on the effect of the number of people living in a household on the atmosphere in the household is conflicting. Following Bradley and Corwyn (2002), the degree

of crowding in a residence is connected to children's cognitive and language competences. Large numbers of people living in the same residence generally causes distresses and distractions, which results in a lower stimulation found in the home and less allocation of time and attention to each child. On the contrary, Brown and Grable (2015) indicate that, as more children enter a family, parental styles tend to become more consistent and relaxed, caused by a decline in parental concern. This is contradictory, but by all means indicates that family size is an important driver for atmosphere in the residence and for the resulting personality characteristics that individuals possess.

Wang et al. (2009) examined the effects of seven life history variables factors on risk-taking preferences. One of these life history variables concerns the number of siblings an individual has. They related the number of siblings to the family environment in which siblings interact. More siblings in a household fosters a cooperative atmosphere in which siblings provide protection to each other, which reduces preferences for risky activities and behavior. Their study shows that the number of siblings one has, is negatively related to the likelihood of engaging in risky behavior. This is in line with the findings of Calvet and Sodini (2014) who have found that the number of people living in the household strongly negatively affects an individual's financial risk preferences, using Swedish panel data. However, they provide a different explanation for this negative association than Wang et al. (2009). Calvet and Sodini (2014) argue that members of a large family will experience substantial background risk caused by the random needs of large families and will therefore lower the riskiness in their financial asset allocation strategy. Their financial portfolio decisions show characteristics of the general behavior of poorer households of smaller size. This implies both less investment in the stock market and a lower amount invested in stocks.

On the contrary, an experiment in Zambia by Wik et al. (2004) has found that a larger household size decreases risk aversion and thus increases risk-taking behavior. This negative effect on risk aversion can be due to either the increased labor force for the household or to the improved access to insurance, diversification and coping opportunities. Since this experiment was only conducted among around 100 households in Zambia, these findings may not be representative for the risk-taking behavior of the rest of the world. This paper is more in line with the studies of Wang et al. (2009) and Calvet and Sodini (2014) and therefore, the next hypothesis was formed based on their findings:

Hypothesis 1: Family size during childhood, and in particular the number of siblings one has, is negatively correlated with both the decision to invest and the amount of risky assets in an individual's financial portfolio.

2.2 Parental composition

Previous literature shows that parent-child relationships significantly affect the personality, behavior and long-term wellbeing of children. Kalmijn (2013) states that there are large differences in the strength of ties between parents and children across parent types by comparing children of biological parents who remain married, children with stepparents and children with divorced biological parents. It appears that children growing up in one-parent families and stepparent families experience a relatively low level of perceived family cohesiveness compared to families with both biological parents. This may be due to the earlier period of family disruption (Amato, 1987). Households with two biological parents contain children with greater cognitive, emotional and social skills, not only during childhood, but also later in life (Amato, 2005). Superior cognitive abilities in childhood and superior cognitive abilities in adulthood are both positively associated with the propensity to invest in relatively risky assets. (Christelis et al., 2010; Christelis et al., 2012) This may indirectly indicate that children who are raised by both biological parents are more likely to invest in risky financial assets than children from single parent households or households containing stepparents.

In line with the abovementioned theory, a study by Hryshko, Luengo-Prado, and Sørensen (2011) found, by using data from the American panel survey PSID, that the probability of being extremely risk averse is significantly less for children raised by both biological parents. In addition, Bertocchi, Brunetti, and Torricelli (2011) show that single women have a lower propensity to invest in relatively risky assets compared to married males and females. The likelihood of grown-up children owning transaction accounts and stocks is affected by whether their parents held these financial assets (Chiteji and Stafford, 1999). This may imply that children copy the financial portfolio decisions of their parents and indirectly cause that children raised by a single mother have a lower propensity to invest in risky financial assets than children raised by two parents.

Prior research has suggested that parents are important in shaping children's views about risk tolerances. They influence to what extent children engage in risky activities (Dohmen et al., 2006). Mothers are relatively more involved in moderating and preventing risky behaviors than fathers (Morrongiello and Dawber, 2000). This may be due to the fact that mothers exhibit a greater influence on the socialization of children in most areas (Clearfield and Nelson, 2006). A related study by Kennison et al. (2016) contradicts abovementioned statements. They have found that men's financial risk taking is affected by the mother-child relationship during childhood. Negative or no mother-child interactions, which may be due to a divorce, the existence of a step-mother, or single-father families, increases financial risk-taking for males. However, this study only found significant results for males' interactions with their mothers with regard to financial risk preferences.

Divorce has proven to decrease children's chances for wellbeing, which is mainly due to a decrease in parental involvement, a decrease in income and lower access to community resources (McLanahan and Sandefur, 1994). The relationship between children and stepparents in early stages is often tense, but as time elapses, the existence of a stepparent increases parental control (Dornbusch et al., 1985), which may support the development and emotional well-being of the children (Amato, 2005). The degree of children's wellbeing is likely to have an effect on the value of their human capital. Diminished human capital will result in lower lifetime earnings, which has direct implications for an individual's portfolio allocation (Hanushek and Woessmann, 2008). At the household level, stock market participation is positively correlated with wealth (Guiso et al., 2003). This implies that children raised by both biological parents are more likely to participate in the stock market than children raised by a single parent or children raised by one or more stepparents.

This indicates that the number of parents in the household and the nature of these parents both affect financial portfolio decisions in adulthood, either directly or indirectly, and leads to the following hypotheses:

Hypothesis 2a: Children raised in a single parent family will invest less often and a lower amount in risky financial assets than children living in a household with two parents.

Hypothesis 2b: Children raised in a household with at least one stepparent will invest less often and a lower amount in risky financial assets than children raised by both biological parents.

3. METHODOLOGY

The preceding section suggests that the number of siblings and parental structure during childhood are important determinants of risk-taking behavior in choosing financial portfolios. The analysis distinguishes two main financial portfolio decisions for which different models are employed. First, the participation decision covers a binary choice variable for whether an individual holds risky financial assets in the form of stocks. The second decision covers the amount of funds invested in those stocks. The analyses are conducted for both direct stockholding and total stockholding. Total stock ownership includes individuals who hold stocks directly as well as individuals that hold mutual funds or managed investment accounts that invest in stocks. The same decisions are analyzed for bond ownership. The next sections elaborate on the two main decisions and the corresponding dependent variables, after which the empirical model will be discussed.

3.1 Participation decision

The participation decision (whether an individual holds risky financial assets or not) is estimated using a probit regression model, since the dependent variables have binary outcomes. The aim of a probit model is to estimate the probability that an observation with particular characteristics will be assigned to a specific one of the two outcomes. Both direct stockholding and total stockholding are considered. Respondents that hold mutual funds or managed investment accounts and reported that these investments consist mostly of stocks or half of stocks and half of bonds were coded as indirectly holding stocks. Mutual fund or managed investment account holdings that consist mainly of bonds or are half invested in stocks and half in bonds were both coded as indirect bond holdings. An individual is defined to participate in the total stock market when he/she holds either directly or indirectly stocks. The same holds for participation in the total bond market.

3.2 Amount of financial assets

First, the amount of risky financial assets held by the respondents has been estimated by a two-part model. This implies that the decision to participate in the stock market which was analyzed by the probit model, has been extended with a linear OLS regression on the amounts invested in the stock market, only for the positive observations. A Tobit regression model is capable to estimate the amount of financial assets held, conditional on the fact that

an individual decides to hold financial assets in the first place. The Tobit model is more appropriate then the two-part model consisting of probit and OLS, since OLS restricts attention to the respondents who hold financial assets only. A Tobit model is designed to estimate linear relationships between variables when some constraint has been set on the dependent variable. The unconditional dependent variables 'amount in stocks', 'total amount in stocks', 'amount in bonds' and 'total amount in bonds' are constrained by the fact that they cannot be negative, but the value is zero for all respondents who do not possess financial assets. A disadvantage of the Tobit model is that it is only possible to interpret the measurement of both effects together (the participation decision and the amount of financial assets held) when the estimated coefficients of these separate effects point in the same direction. Therefore, OLS estimations will be conducted first, and when the significant coefficients in the OLS regression have the same sign as in the probit model, a Tobit model will be estimated to analyze both effects together.

Also in considering the amount of financial assets held, both direct and total amounts invested in the stock market are taken into account. There are no exact amounts reported or imputations available for the indirect stockholdings through mutual funds or managed investment accounts. Therefore, the amount invested indirectly in the stock market has been approximated by taking the amount invested in mutual funds or managed investment accounts when the respondent indicated that the investment consists mostly of stocks. When the respondent reported that the mutual fund or managed investment account holding consists half of stocks and half of bonds, the amount invested was divided by two to approximate the amount of indirect stockholdings. These amounts were added to the amount invested directly in stocks to obtain total stockholdings. The same was performed for the indirect amounts invested in bonds through mutual funds or managed investment accounts.

3.3 Empirical model

From an econometric point of view, both the participation decision and the amount invested can be modeled as dependent on a latent variable. The decision on the amount invested in financial assets can be seen as a regression containing more observable information on the latent variable. The following linear latent variable model describes both decisions:

$$y_i^* = x_i'\beta + \epsilon_i, \qquad (1)$$

where y_i^* is unobserved, x_i represents the observable variables affecting the latent variable for the ith individual, and ϵ_i represents the unobservable variables for the ith individual. ϵ_i are assumed to be (standard) normally distributed, so that maximum likelihood estimation can be conducted. For the participation decision, ϵ_i are assumed to follow the standard normal distribution, whereas for the decision on the amount invested, the normal distribution assumption is sufficient.

In the participation decision, y_i^* is a dummy variable that takes on the value 1 if $y_i^* \geq 0$ and takes on the value 0 otherwise. For this decision, y_i^* is indicated by y_i^P:

$$\begin{aligned} y_i^P &= 1 \; if \; y_i^* > 0 \\ &= 0 \; if \; y_i^* \leq 0 \end{aligned} \tag{2}$$

In the decision regarding the amount of financial assets held, y_i^* is observed when $y_i^* > 0$ and y_i^* should take on the value of 0 otherwise. For this decision, y_i^* is indicated by y_i^A:

$$\begin{aligned} y_i^A &= y_i^* \; if \; y_i^* > 0 \\ &= 0 \; if \; y_i^* \leq 0 \end{aligned} \tag{3}$$

Thus, both the probit and the Tobit regression models exhibit the same structural model, which are measured differently. The Tobit model provides more information on how the latent variable y_i^* is translated into y_i.

All regressions will be conducted both for the hypotheses separately as with all studied independent variables in one model. The first analysis, which will be in column (1) in the tables containing regression output, investigates the effect of the number of siblings on financial asset holdings. This equation, as an extension of equation (1) will describe the regression of the first hypothesis:

$$y_i^* = S_i\alpha + Z_i'\beta \; + \; \epsilon_i, \tag{4}$$

where S_i represents the number of siblings of individual i, Z_i represents the vector of demographic and socio-economic control variables and ϵ_i represents the error term which is assumed to follow the (standard) normal distribution.

Hypothesis 2a relates the number of parents a child has to financial portfolio decisions. The regression results from this hypothesis are stated in column (2) in the results tables and can be described by the following equation:

$$y_i^* = SP_i\delta + Z_i'\beta + \epsilon_i, \quad (5)$$

where SP_i is a dummy variable for whether an individual has been raised in a single parent household, Z_i represents the vector of demographic and socio-economic control variables and ϵ_i represents the error term which is assumed to follow the (standard) normal distribution.

Hypothesis 2b indicates an association between the nature of parents (biological versus adoptive/step/foster parents) and financial asset holdings later in life. Column (3) in the tables containing regression results shows the analysis relating to this hypothesis. The following equation describes this relation:

$$y_i^* = ST_i\lambda + Z_i'\beta + \epsilon_i, \quad (6)$$

where ST_i is a dummy variable for whether an individual lived in a household with at least one stepparent, Z_i represents the vector of demographic and socio-economic control variables and ϵ_i represents the error term which is assumed to follow the (standard) normal distribution.

When aggregating all studied independent variables in one model, the following equation has been obtained as an extension of equation (1):

$$y_i^* = S_i\beta_1 + SP_i\beta_2 + ST_i\beta_3 + Z_i'\beta_4 + \epsilon_i, \quad (7),$$

where S_i represents the number of siblings of individual i, SP_i is a dummy variable for whether an individual has been raised in a single parent household, ST_i is a dummy variable for whether an individual lived in a household with at least one stepparent, Z_i represents the vector of demographic and socio-economic control variables and ϵ_i represents the error term which is assumed to follow the (standard) normal distribution.

Both probit and Tobit parameters of interest are obtained by Maximum Likelihood estimation using Stata.

4. DATA

In order to test the stated hypotheses, data has been obtained from the Survey of Health, Ageing and Retirement in Europe (SHARE)[1] and Stata has been used to run the regressions.

4.1 SHARE

SHARE is a panel database with extensive micro data on health, socio-economic status and social and family networks of approximately 123,000 European individuals aged 50 or older. The data is collected through face-to-face, computer-aided personal interviews (CAPI) and is supplemented by a questionnaire that can be completed by the respondent individually. SHARE contains both items that are asked on the individual level and questions that are asked on the household level. Household level variables are only asked to one of the respondents from a household. Currently, six waves of SHARE are released in which some modules are added or adapted compared to the first wave. For this research, the data will be obtained from SHARELIFE (wave 3) collected in 2008-2009 and wave 4 collected in 2010. The third wave of data collection for SHARE is called SHARELIFE since it focuses on people's life histories. It links individual detailed micro data on all important areas of the respondents' entire life with institutional macro data on the welfare state. It contains all important areas of the respondents' life histories and covers their childhood conditions. Wave 4 is the third regular panel wave of SHARE. Each wave consists of several modules covering the different parts that are handled in the questionnaire. The financial assets part covers both the ownership and amounts invested in different financial assets, varying in their riskiness.

[1] *This paper uses data from SHARE Waves 3 (SHARELIFE) and 4.*
(DOIs: 10.6103/SHARE.w1.600, 10.6103/SHARE.w2.600, 10.6103/SHARE.w3.600, 10.6103/SHARE.w4.600, 10.6103/SHARE.w5.600, 10.6103/SHARE.w6.600), see Börsch-Supan et al. (2013) for methodological details. (1)

The SHARE data collection has been primarily funded by the European Commission through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812) and FP7 (SHARE-PREP: N°211909, SHARE-LEAP: N°227822, SHARE M4: N°261982). Additional funding from the German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the U.S. National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064, HHSN271201300071C) and from various national funding sources is gratefully acknowledged (see www.share-project.org).

Therefore, the SHARE dataset is particularly suited to study the association between family structure in childhood and financial asset composition.

4.2 Variables of interest

In this paper, both direct and indirect participation in the stock market versus the bond market has been accounted for. By indirect participation is meant that individuals may invest in stocks or bonds indirectly through mutual funds or managed investment accounts. This information has been obtained from the following item from wave 4: 'Do you currently have stocks/bonds/mutual funds/managed investment accounts?'. The degree of riskiness is typically higher for directly held stocks than for indirectly held stocks, since analysts investing on behalf of individuals in mutual funds or managed investment accounts in general possess more financial knowledge than individual investors.

The number of siblings has been approximated from the questions 'how many brothers/sisters do you have that are still alive?' from wave 4, since no data is available concerning the number of siblings the respondents had during childhood. The variable 'number of siblings' has been created by adding the number of brothers and the number of sisters that the respondents reported. Parental composition has been measured by the item 'who lived in the household when 10 years old?'. There are 9 possible answers that can be selected in this question, i.e. (1) Biological mother; (2) Biological father; (3) Adoptive, step or foster mother; (4) Adoptive, step or foster father; (5) Biological brother(s) or sister(s); (6) Adoptive, step, foster or half-brother(s) or sister(s); (7) Grandparent(s); (8) Other relative(s); (9) Other non-relative(s). The variable single parent is a dummy variable that takes the value 1 when only one of the answers (1) to (4) has been selected, and 0 otherwise. The variable 'at least one stepparent' is a dummy variable taking the value 1 when either answer (3), answer (4) or both answer (3) and answer (4) were selected.

The regression contains socio-economic and demographic variables that serve as control variables to avoid bias. In this research, the models are controlled for gender, age, education, occupation, partnership, income, wealth and country effects, since these variables are used as control variables widely throughout the literature. There has been controlled for gender by adding the variable 'female' as independent variable in the model to capture possible gaps between male and female risk preferences, since previous literature suggests

that men are more risk loving than women (Dohmen et al., 2011). The respondents were ranked as high educated or low educated by the International Standard Classification of Education (ISCED). ISCED classifies the level of education in a range from 0 (no education/only primary school education) to 6 (second stage of tertiary education). In this analysis, ISCED levels of 0 to 2 were classified as low education and ISCED levels of 3 and above were classified as high education. The dummy variable representing high education was captured in the regression, since Guiso et al. (2003), amongst others, argue that higher education is related to higher stock market participation. Age enters the regressions in both linear and quadratic terms to remove lifecycle effects, such as age-related increases in risk aversion (Dohmen et al., 2011). Furthermore, two dummy variables representing occupation ('retired' and 'employed') were added, which may account for the possible effect of public pensions on investment in the stock market. A dummy variable 'couple', representing whether the respondents have a partner or not, was also included. This control variable was included since individuals with different marital status may differ in their risk attitudes (Bertocchi et al., 2011). Since stock and bond ownership depends substantially on household income and wealth, these variables are also both included in the regression. These variables are rescaled (divided by 10,000) in order to obtain coefficients that are interpretable. Lastly, there are control variables for country effects to account for the multi-country variability in the SHARE sample. All participating countries are included in the regressions except for Germany, to avoid multicollinearity. Germany is used as reference country since it is a large, central country in Europe with a sound financial system.

An overview of all variables used in the regression with their descriptions and sources is provided in Table A1 in the Appendix.

4.3 Construction of the dataset

In order to construct the final dataset, first the different modules within the waves were merged based on a unique value allocated to each individual participating in the survey. Within these modules, only the relevant variables covered in the analysis are kept to obtain a concise dataset. Second, the merged modules for both SHARELIFE and wave 4 were combined into one dataset. Hence, the data of the respondents who participated in only one of the waves has been excluded.

Since SHARE is a large household survey, it suffers from a high item non-response rate. This may lead to substantial bias in the coefficient estimates and contribute to a large efficiency loss, especially when many variables are entered into the regression. Most non-response results from items that are deemed sensitive by the respondents, such as income and household net worth. This item non-response has been mitigated by using the imputations files of missing data. SHARE provides five multiple imputations of the missing values on each variable of which the first was taken in this analysis. Items for which no imputations are available were recoded as follows. Items that respondents refused to answer and items for which respondents answered: "Don't know", were reported as missing values. When respondents did not want to reveal the exact amount (or did not know the exact amount) of financial asset holdings, they were asked a multiple choice question containing brackets for which they must indicate in what bracket their amount invested in the particular financial asset is. To obtain a value for these responses, the mid-point between the brackets was taken. When respondents reported that the amount is above the upper bracket, an assumption was made that the amount contributes 1.5 times the upper bracket. When using household-level specifications of the data, missing values in the variables of one of the two partners was filled with the value of the responding partner. Standard errors were adjusted for clusters at the household level in order to make them robust for the existence of correlation between partners within the same household. Moreover, the data was checked for outliers to avoid confounding results. Negative and unrealistic values for amounts of financial assets held were removed. After these adjustments, the final sample consists of 12,144 individuals.

4.4 Descriptive Statistics

Descriptive statistics on the dependent variables can be found in Table 1 and descriptive statistics on the independent variables (including the control variables) can be found in Table 2.

Table 1: Descriptive statistics on the dependent variables

This table reports the descriptive statistics of the dependent variables, which include the mean values, standard deviations, the minimum and maximum values and the number of observations. Definitions and sources of the variables are provided in Table A1 in the Appendix.

Dependent variables	Mean	Standard Deviation	Min	Max	Number of observations

Has stocks	0.112	0.316	0	1	12,144
Has bonds	0.059	0.235	0	1	12,144
Has mutual funds*	0.106	0.307	0	1	12,144
Has stocks total	0.160	0.366	0	1	12,144
Has bonds total	0.115	0.319	0	1	12,144
Conditional amount in stocks	41,636	78,558	2	719,950	1,366
Conditional amount in bonds	51,367	68,981	0.134	500,000	711
Conditional amount in mutual funds*	49,083	70,837	13.419	600,000	928
Conditional total amount in stocks	50,246	91,761	2	812,500	1,366
Conditional total amount in bonds	58,851	80,978	1	647,983	756
Unconditional amount in stocks	4,683	29,441	0	719,950	12,144
Unconditional amount in bonds	3,007	20,583	0	500,000	12,144
Unconditional total amount in stocks	5,652	34,620	0	812,500	12,144
Unconditional total amount in bonds	3,375	23,462	0	647,983	12,144
Mutual funds – mostly stocks*	0.285	0.451	0	1	1,145
Mutual funds – half stocks/half bonds*	0.479	0.500	0	1	1,145
Mutual funds- mostly bonds*	0.231	0.421	0	1	1,145

*Note: Variables indicated by * are not used in the analysis, only for calculating other variables. All monetary amounts are PPP-adjusted.*

Table 1 shows that 11.2% of the respondents currently has a direct investment in stocks, whereas 5.9% currently has a direct investment in bonds. When aggregating the direct and the indirect investments in financial assets, 16% and 11.5% of the sample holds stocks and bonds, respectively. When only accounting for the respondents who hold a positive amount of financial assets, the average amount of stocks centers around €40,000 for direct stockholdings and around €50,000 for total stockholdings. Furthermore, the average amount of bonds then centers around €50,000 for direct bond holdings and around €60,000 for total bond holdings. The average amount of financial assets held sharply declines to values ranging

from €3,000 to €6,000 when taking into account the respondents that do not hold financial assets (i.e. unconditional holdings).

Table 2: Descriptive statistics on the independent variables

This table reports the descriptive statistics of both the independent variables and the control variables, which include the mean values, standard deviations, the minimum and maximum values and the number of observations. Definitions and sources of the variables are provided in Table A1 in the Appendix.

	Independent variables	Mean	Standard Deviation	Min	Max	Number of observations
Number of siblings	Number of brothers*	1.220	1.229	0	10	12,144
	Number of sisters*	1.330	1.278	0	10	12,144
	Number of siblings	2.550	1.893	0	16	12,144
Parental composition	Two parents*	0.920	0.271	0	1	12,144
	Single parent	0.061	0.240	0	1	12,144
	Both biological parents*	0.898	0.302	0	1	12,144
	At least one stepparent	0.027	0.163	0	1	12,144
Control variables	Female	0.562	0.496	0	1	12,144
	Age	67.891	9.127	32	101	12,144
	Low education	0.490	0.500	0	1	12,144
	High education	0.510	0.500	0	1	12,144
	Couple	0.716	0.451	0	1	12,144
	Retired	0.598	0.490	0	1	12,144
	Employed	0.211	0.408	0	1	12,144
	Total household income	3.511	5.000	0	109.910	12,144
	Household net worth	26.614	46.304	-11.824	1500.64	12,144
	Austria	0.036	0.187	0	1	12,144
	Germany	0.068	0.252	0	1	12,144
	Sweden	0.069	0.253	0	1	12,144
	The Netherlands	0.109	0.312	0	1	12,144
	Spain	0.104	0.306	0	1	12,144

Italy	0.123	0.328	0	1	12,144
France	0.057	0.233	0	1	12,144
Denmark	0.088	0.283	0	1	12,144
Switzerland	0.062	0.242	0	1	12,144
Belgium	0.114	0.317	0	1	12,144
Czech Republic	0.070	0.255	0	1	12,144
Poland	0.099	0.299	0	1	12,144

*Note: Variables indicated by * are not used in the analysis, only for calculating other variables. All monetary amounts are PPP-adjusted and in ten thousands of euros.*

The average number of siblings that the respondents have is 2.55, from which the average number of sisters is slightly larger than the average number of brothers. Only 6.1% of the sample lived in a household with only a single parent when they were 10 years old, whereas 89.8% lived with both biological parents. 2.7% of the considered households contained at least one stepparent. Furthermore, slightly more women (56.2%), than men (43.8%) participated in the survey and the average age of the respondents is 67.9 with a minimum of 32 and a maximum of 101 years. The largest part of the sample (59.8%) is currently retired, whereas around one in five respondents is still employed. The average total household income of the participating households amounts approximately €35,000 and the average household net worth approximates €266,000.

5. RESULTS

In this section, the results of the regression analyses are presented. Subsection 5.1 discusses the results from the probit model for direct participation in the stock market, Subsection 5.2 discusses the results from a similar model for total stock market participation, Subsection 5.3 shows OLS estimations for the amount invested in stocks, Subsection 5.4 presents the Tobit models for stockholding and Subsection 5.5 extends the preceding results for stockholdings to bondholdings. For both the probit models and the Tobit models, the estimates of the marginal effects at the means are reported to determine the instantaneous rate of change at the mean values.

5.1 Direct participation in the stock market

Table 3 shows the estimates of the marginal effects and the corresponding cluster-robust standard errors for the direct stockholding. The results support the first hypothesis that the number of siblings one has is negatively related to the decision to hold stocks. An increase of one in the number of siblings leads to 0.2% lower probability of holding stocks. The direct stock holding analysis does not show any significant results relating to the single parent families and the existence of stepparents. The preceding results do not change by a large amount or in significance when all variables are inserted together in one model.

Most control variables show a significant effect on the decision to participate in the stock market, in line with previous literature. Age, education, income and wealth are all, as expected, clearly positively related to the decision to hold stocks directly. More specifically, a unit change in age leads to an approximately 0.9% increase in the probability of holding stocks directly. Being highly educated increases the probability of holding stocks by approximately 4.1% and increasing total household income by €10,000 leads to an increase in the probability of holding stocks by 0.3%. Individuals coming from the countries Sweden, France, Denmark, Switzerland and Belgium do participate significantly more in the stock market than individuals from the reference country Germany. Individuals from the countries Austria, Spain, Italy, Czech Republic and Poland participate significantly less in the stock market.

Table 3: Probit model of participation decision for direct stockholding

The dependent variable analyzed in this table is 'has stocks'. In columns (1) to (3), the model has been estimated for the hypotheses separately. In column (4), the results from the estimation including all independent variables are shown. The reported coefficients represent the probit estimates of the effect of a marginal change in the corresponding independent variables evaluated at their mean value on whether the respondents invested directly in stocks. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Number of siblings	-0.002**			-0.002**
	(0.001)			(0.001)
Single parent		0.001		0.000
		(0.010)		(0.010)
At least one stepparent			-0.008	-0.008
			(0.013)	(0.013)
Female	-0.034***	-0.034***	-0.034***	-0.034***
	(0.004)	(0.004)	(0.004)	(0.004)
Age	0.009**	0.009**	0.009**	0.009**

	(0.004)	(0.004)	(0.004)	(0.004)
Age^2	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
High education	0.041***	0.042***	0.042***	0.041***
	(0.005)	(0.005)	(0.005)	(0.005)
Total household income	0.003***	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)
Household net worth	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Couple	-0.007	-0.007	-0.007	-0.007
	(0.005)	(0.005)	(0.005)	(0.005)
Retired	0.015**	0.015**	0.015**	0.015**
	(0.008)	(0.008)	(0.008)	(0.008)
Employed	0.013**	0.013	0.013	0.013
	(0.009)	(0.009)	(0.009)	(0.009)
Austria	-0.029*	-0.029*	-0.029*	-0.028*
	(0.016)	(0.016)	(0.016)	(0.016)
Sweden	0.141***	0.141***	0.141***	0.141***
	(0.011)	(0.011)	(0.011)	(0.011)
The Netherlands	0.019*	0.016	0.016	0.019*
	(0.011)	(0.011)	(0.011)	(0.011)
Spain	-0.061***	-0.062***	-0.062***	-0.061***
	(0.015)	(0.015)	(0.015)	(0.015)
Italy	-0.033***	-0.034***	-0.034***	-0.034***
	(0.012)	(0.012)	(0.012)	(0.012)
France	0.027**	0.025**	0.025**	0.026**
	(0.012)	(0.012)	(0.012)	(0.012)
Denmark	0.115***	0.115***	0.115***	0.115***
	(0.011)	(0.011)	(0.011)	(0.011)
Switzerland	0.040***	0.039***	0.038***	0.040***
	(0.012)	(0.012)	(0.012)	(0.012)
Belgium	0.041***	0.040***	0.039***	0.041***
	(0.010)	(0.010)	(0.010)	(0.010)
Czech Republic	-0.042***	-0.040***	-0.041***	-0.042***
	(0.015)	(0.015)	(0.015)	(0.015)
Poland	-0.097***	-0.098***	-0.098***	-0.097***
	(0.016)	(0.016)	(0.016)	(0.016)
Log-likelihood	-3,335	-3,336	-3,336	-3,334
Pseudo R-squared	0.219	0.219	0.219	0.219
Number of observations	12,144	12,144	12,144	12,144

5.2 Total participation in the stock market

The estimates of the marginal effects and the corresponding cluster-robust standard errors for the total stockholding are reported in Table A2 in the Appendix. The results from this probit model on total stockholding in general coincide with the results from the probit model on direct stockholding only, depicted in Table 3. Both models provide a negative estimate for the coefficient of the number of siblings. Interestingly, the estimated marginal effect for the number of siblings is higher for the total participation than for direct participation; a unit increase in the number of siblings decreases the probability of holding stocks either directly or indirectly by 0.6%. The estimated marginal effects for both the hypothesis relating to the number of parents and the hypothesis relating to the nature of parents are not statistically different from zero. The sign and significance of most control variables in the total stockholding analysis are equivalent to the results from the probit model on direct stockholding.

5.3 Amount invested in stocks

Table A3 (see Appendix) depicts the results of the OLS regression where the amount invested directly in stocks has been taken as the dependent variable. As could be seen from the table, a significant constant has been identified in all four regressions and is centered around 225,000 euros. Furthermore, the results show that the number of siblings is clearly negatively related to the amount directly invested in stocks, given that an individual has a direct investment in the stock market. When the number of siblings an individual has increases by one, the amount of stocks held in his/her financial portfolio decreases by €2,547. The sign of this estimated coefficient is consistent with the participation decision analyzed by the probit model in Table 3. The estimated coefficients for the hypotheses about parental composition are not accounted for in the decision whether it is appropriate to use a Tobit model, since they are not significant in both models.

Overall, the OLS regression provides less significant conclusive results than the probit regression, but most significant estimated coefficients head in the same direction. However, some of the significant results of the country dummies have the opposite sign in the OLS regression (see Table A3) compared to the probit model in Table 3, such as France and Denmark. These countries show significant coefficient estimates for both the probit model and the OLS regression. However, the sign of the coefficient in the probit model is positive, whereas the sign of the coefficient in the OLS regression is negative. This indicates that individuals from these countries are more willing to participate in the stock market, but on

average invest a lower amount in these stocks compared to the reference country Germany. This implies that one should be cautious when interpreting the results of a Tobit model that aggregates the participation decision and the decision on the amount invested in the stock market, as the two opposite signs may disappear when combining the two decisions in one model. Since the significant results of the studied independent variables of this paper head in the same direction, the decision to participate in the stock market directly with the decision on the amount of directly held stocks are combined in a Tobit regression. Shifting to the total stock market, the same conclusions can be drawn by comparing the probit regression on total stockholding (see Table A2 in the Appendix) and the OLS regression on the total amount of stocks held, which can be found in Table A4 in the Appendix. Therefore, a Tobit regression has also been conducted for the total amount of stocks held. The next subsection elaborates on the performed Tobit regressions.

5.4 Tobit models for stockholding

In this subsection, the results of the Tobit regressions are presented. The results from the marginal effects of the amount of direct stockholding can be found in Table 4, and the results from the marginal effects of the total amount of stockholding can be found in Table A5 in the Appendix. These tables reveal that the marginal effect at the mean value for the number of siblings is clearly negative and significant at the 1% level, which is in line with the results obtained before. A unit increase in the number of siblings an individual has decreases both the amount invested directly in stocks and the total amount invested in stocks, by €2,763 and €3,258, respectively. The negative association between the number of siblings and stockholding (both stock ownership and the amount of stocks held) can be explained by two different reasons found in the existing literature. First, more siblings induces a more cooperative atmosphere in the household, which reduces preferences for risky behavior (Wang et al., 2009). Second, large families experience substantial background risk due to random needs, which makes them reluctant to engage in risky behavior (Calvet and Sodini, 2014). The observed effect is again larger for total stockholding than for direct stockholding. There are no significant coefficients found for the variables concerning parental composition.

Table 4: Tobit model on the amount held directly in stocks

The dependent variable analyzed in this Tobit regression is 'unconditional amount in stocks'. In columns (1) to (4), the reported coefficients represent the Tobit estimates of the effect of a marginal change in the corresponding independent

variables evaluated at their mean value on the amount invested directly in stocks, conditional on a positive value that has been invested in stocks. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Number of siblings	-2.763***			-2.784***
	(0.920)			(0.921)
Single parent		-2.576		-3.637
		(7.150)		(7.142)
At least one stepparent			-6.974	-7.140
			(9.111)	(9.085)
Female	-26.105***	-26.081***	-26.103***	-26.126***
	(3.556)	(3.560)	(3.560)	(3.555)
Age	8.307***	7.982***	7.986**	8.406***
	(3.067)	(3.051)	(3.058)	(3.079)
Age^2	-0.061***	-0.058***	-0.058**	-0.061***
	(0.021)	(0.021)	(0.021)	(0.022)
High education	30.788***	31.752***	31.768***	30.768***
	(4.424)	(4.464)	(4.466)	(4.420)
Total household	2.434***	2.462***	2.462***	2.433***
income	(0.415)	(0.417)	(0.417)	(0.414)
Household net worth	0.438***	0.437***	0.437***	0.437***
	(0.087)	(0.088)	(0.088)	(0.087)
Couple	-6.962*	-6.990*	-6.952*	-6.898*
	(4.157)	(4.159)	(4.158)	(4.155)
Retired	12.428**	12.268**	12.280**	12.398**
	(5.931)	(5.939)	(5.942)	(5.928)
Employed	9.839	9.936	9.881	9.881
	(6.809)	(6.825)	(6.822)	(6.808)
Austria	-28.431**	-28.412**	-28.373**	-28.286**
	(12.193)	(12.219)	(12.226)	(12.185)
Sweden	92.033***	91.520***	91.754***	91.764***
	(9.530)	(9.536)	(9.523)	(9.539)
The Netherlands	11.386	7.704	7.733	10.866
	(8.686)	(8.656)	(8.633)	(8.716)
Spain	-54.739***	-56.025***	-56.149***	-55.204***
	(13.501)	(13.566)	(13.554)	(13.546)
Italy	-32.873***	-33.852***	-33.896***	-33.399***
	(10.089)	(10.148)	(10.126)	(10.135)
France	9.440	7.911	7.836	9.041
	(9.528)	(9.510)	(9.506)	(9.537)
Denmark	70.521***	69.690***	69.819***	70.095***
	(8.727)	(8.731)	(8.699)	(8.742)
Switzerland	27.366***	25.632**	25.716**	26.878***

	(10.296)	(10.266)	(10.258)	(10.320)
Belgium	27.342***	25.394***	25.351***	26.871***
	(8.716)	(8.705)	(8.666)	(8.760)
Czech Republic	-39.088***	-37.688***	-37.682***	-39.431***
	(11.633)	(11.628)	(11.609)	(11.672)
Poland	-78.742***	-79.276***	-79.374***	-79.060***
	(14.237)	(14.311)	(14.282)	(14.283)
Log likelihood	-19,525	-19,530	-19,529	-19,525
Pseudo R-squared	0.046	0.046	0.046	0.046
Number of observations	12,144	12,144	12,144	12,144

Note: All monetary amounts are PPP-adjusted and in thousands of euros.

5.5 Bondholding

Until now, only stockholdings were considered as dependent variables. In order to make a fair comparison, regressions on bondholdings were conducted as well. Table 5 below and Table A6 (see Appendix) show the probit models for the participation decision to hold bonds and Table A7 and A8 in the Appendix show the OLS regressions for the amounts of bonds held. Since the sign of the relevant significant coefficients in both analyses is in the same direction, Tobit regressions can also be applied appropriately for investment in bonds. The results of the Tobit models for direct and total bondholding can be found in Table A9 and A10 in the Appendix.

5.5.1 Probit models

The probit regression on the decision to hold bonds directly (see Table 5) shows that the number of siblings is slightly negatively related to the decision to participate in the bond market. A slightly higher marginal effect in the same direction has been found for the number of siblings in the probit model for total bondholding (see Table A6). Thus, an increase in the number of siblings an individual has, has a negative effect on both participation in the bond market and participation in the stock market, either directly or indirectly. Interestingly, the marginal effects of the number of siblings on participation in the bond market are more or less equivalent in magnitude to the effects found for the stock market, indicating that individuals perceive stocks and bonds as similar investments. Moreover, a significant negative marginal effect on the bond market was found for children growing up with at least one stepparent in the household. More specifically, these children have a 2.1% lower probability to invest in

bonds directly and a 3.3% lower probability to invest in the bond market either directly or via mutual funds or managed investment accounts. Lastly, the probit regression on total bondholding (Table A6 in the Appendix) reveals that children raised by a single parent have a 2.1% lower probability of owning bonds later in life. These results contradict hypotheses 2a and 2b as stocks were considered as risky financial assets compared to bonds and direct investments were considered as more risky than indirect investments. However, an alternative explanation to these findings may be that bonds are perceived more risky than savings accounts and Treasury bills. Therefore, the investment in bonds still can be triggered by a single parent family or the existence of a stepparent during childhood. These households are both often characterized by a period of family disruption, which increases children's risk aversion. Above mentioned findings are all significant at the 5% level.

Table 5: Probit regression on the decision to hold bonds directly

The dependent variable analyzed in this probit regression is 'has bonds'. In columns (1) to (4), the reported coefficients represent the probit estimates of the effect of a marginal change in the corresponding independent variables evaluated at their mean value on the amount invested in bonds, conditional on a positive value that has been invested in bonds. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Number of siblings	-0.002*			-0.002**
	(0.001)			(0.001)
Single parent		-0.005		-0.006
		(0.006)		(0.006)
At least one stepparent			-0.021**	-0.021**
			(0.010)	(0.010)
Female	-0.004	-0.004	-0.004	-0.004
	(0.003)	(0.003)	(0.003)	(0.003)
Age	0.003	0.003	0.003	0.004
	(0.002)	(0.002)	(0.002)	(0.002)
Age^2	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
High education	0.020***	0.021***	0.021***	0.020***
	(0.004)	(0.004)	(0.004)	(0.004)
Total household	0.001***	0.001***	0.001***	0.001***
income	(0.000)	(0.000)	(0.000)	(0.000)
Household net worth	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Couple	-0.006	-0.006	-0.006	-0.006

	(0.003)	(0.004)	(0.003)	(0.003)
Retired	0.021***	0.021***	0.021***	0.021***
	(0.005)	(0.005)	(0.005)	(0.005)
Employed	0.019***	0.019***	0.019***	0.019***
	(0.006)	(0.006)	(0.006)	(0.006)
Austria	-0.031***	-0.031***	-0.032***	-0.031***
	(0.010)	(0.010)	(0.010)	(0.010)
Sweden	0.008	0.007	0.008	0.007
	(0.006)	(0.007)	(0.006)	(0.007)
The Netherlands	-0.041***	-0.043***	-0.043***	-0.041***
	(0.008)	(0.008)	(0.008)	(0.008)
Spain	-0.076***	-0.077***	-0.078***	-0.077***
	(0.012)	(0.013)	(0.012)	(0.012)
Italy	0.020***	0.020***	0.019***	0.019***
	(0.006)	(0.006)	(0.006)	(0.006)
France	-0.052***	-0.053***	-0.053***	-0.053***
	(0.010)	(0.010)	(0.010)	(0.010)
Denmark	0.010	0.009	0.009	0.009
	(0.006)	(0.006)	(0.006)	(0.006)
Switzerland	0.007	0.005	0.005	0.006
	(0.007)	(0.007)	(0.007)	(0.007)
Belgium	-0.006	-0.007	-0.008	-0.007
	(0.006)	(0.006)	(0.006)	(0.006)
Czech Republic	-0.056***	-0.055***	-0.055***	-0.057***
	(0.010)	(0.010)	(0.010)	(0.010)
Poland	-0.085***	-0.086***	-0.086***	-0.086***
	(0.012)	(0.012)	(0.012)	(0.012)
Log likelihood	-2,319	-2,320	-2,318	-2,316
Pseudo R-squared	0.144	0.143	0.144	0.145
Number of observations	12,144	12,144	12,144	12,144

5.5.2 Tobit models

The results of the Tobit model regarding direct investment in the bond market can be found in Table A9 in the Appendix and the results of the Tobit model regarding total investment in the bond market can be found in Table A10 in the Appendix. Table A9 depicts that a unit increase in the number of siblings significantly decreases the amount directly invested in bonds by €3,048. Table A10 shows an even larger negative coefficient estimate (-3,340) for the number of siblings, indicating that total bond holding is to a greater extent affected by the number of siblings than direct bond holdings. A second finding in these models relates to the existence of stepparents in the household. Individuals that lived in the

household with at least one stepparent when they were ten years old significantly invest less in the bond market during adulthood. More specifically, they invest €32,084 less directly in bonds and €35,047 less in the total bond market.

5.5.3 Control variables

Most control variables show a significant effect on both the decision to participate in the bond market and the amount invested in bonds. Females significantly participate less and invest a lower amount in the total bond market. Following Dohmen et al. (2011), females are generally more risk averse than males. This contributes to the finding that investment in the bond market is perceived as a risky strategy similar to investment in the stock market. Moreover, education, income, wealth, employment and retirement all have a positive effect on both the decision to hold bonds and the amount of bonds held. Italians significantly participate more in the bond market and invest larger amounts than Germans. Individuals from most other countries participate and invest significantly less in the bond market.

6. ROBUSTNESS CHECKS

6.1 Large gifts and inheritances

The ownership of risky financial assets could be affected by large gifts that an individual has received during his/her life, such as received inheritances in the form of assets. The existence of such large gifts may imply that the observed investment decisions in this paper may not be perfectly due to purposeful investment in those assets resulting from individual preferences, but that they may be due to the absence of disinvestment from any inherited assets. Therefore, it could be insightful to distinguish the effect of the studied family structure variables from that of any gifts received.

A variable 'Received gifts' was obtained from SHARE wave 4 and added as control variable in the regression to control for the above described effect. This variable denotes a dummy variable whether an individual has received at least once in the past a gift or inheritance of a value of more than €5,000. This amount has been converted into a PPP-adjusted equivalent for non-euro countries. The results of probit and Tobit models predicting direct and total stockholdings are shown in Table A11 in the Appendix. As could be denoted from Table A11, receiving a large gift has a highly significant positive effect on the decision

to invest in the stock market as well as on the amount invested in the stock market. It increases the probability of direct stock ownership by 2.1% and the probability of total stock ownership by 4.7%. Moreover, receiving a large gift increases the amount invested directly in stocks by €14,934 and the amount invested in the total stock market by €16,911. However, the results including the variable 'Received gifts' have not altered the sign and significance of the studied variables of interest. Therefore, it can be concluded that the results are robust to the inclusion of large gifts and inheritances.

The same analysis was conducted for bondholding and can be found in Table A12 in the Appendix. When an individual has at least once received a gift consisting of a value of more than €5,000, he/she has a 1.5% higher probability of investing directly in bonds, and a 4.2% higher probability of investing either directly or indirectly in bonds. Furthermore, an individual who has ever received such a large gift invests on average €23,903 more directly in bonds and €26,512 more in total bond holdings. The sign and significance of the estimated coefficients of the studied variables is consistent with the previous obtained results excluding large received gifts, which indicates that the results are robust to the inclusion of large gifts.

6.2 Sensitivity analysis on amount held in indirect stocks

The amount held in indirect stockholdings was estimated by the amount invested in mutual funds or managed investment accounts. In the main analysis, the amount invested was divided by two when the respondent reported that these accounts consist approximately half of stocks and half of bonds to approximate the amount of indirect stockholdings. When the respondent indicated that his/her investment in mutual funds or managed investment accounts consists mostly of stocks, the total amount reported was added as amount invested in indirect stockholdings. It may be appropriate to conduct a sensitivity analysis on the latter approximation. In Table A13 in the Appendix the results can be found from a Tobit regression on the amount of total stockholdings in which the indirect stockholdings have been approximated by the amount invested in mutual funds or managed investment accounts. However, when respondents reported that their investment in these accounts consists mostly of stocks, 75% of the amount reported was taken as indirect stockholdings as compared to 100% which was taken in the main analysis. The same robustness check has been conducted for the indirect amounts invested in bonds through mutual funds or managed investment accounts (see Table A14 in the Appendix). As can be seen in Table A13 and A14, the sign

and significance of the estimated coefficients do not change compared to the model in which 100% of the amount invested in mutual funds was taken when respondents indicated that they mostly invest in either stocks or bonds. Moreover, the size of the significant coefficients remains roughly constant. Therefore, it can be concluded that the assumption made with respect to the calculation of the indirect amount of financial assets is not very strict.

7. CONCLUSION

This paper empirically investigates the effect of the number of siblings and parental composition during childhood on financial portfolio decisions later in life. Data from the Survey of Health, Ageing and Retirement in Europe (SHARE) has been used for the analysis. Both direct and total stockholding as well as direct and total bondholding are analyzed. A probit regression was used to analyze the decision to hold either stocks or bonds and a Tobit regression was used to analyze the amount of stocks or bonds held conditional on the decision to participate in either the stock market or the bond market. The results suggest that family structure aspects experienced during childhood are significantly related to the financial portfolio decisions made later in life. First, the number of siblings an individual has is negatively related to the decision to participate and the amount invested in both the stock and the bond market. These effects may be due to either the more cooperative atmosphere in the household when having more siblings or the experience of substantial background risk caused by the random needs of large families, which both reduces preferences for risky behavior. Second, children from families containing at least one stepparent are less likely to invest in the bond market and also significantly invest a lower amount in the bond market. Third, children from single parent families are less likely to invest in the total bond market, taking both account of direct investments and indirect investments. The last two mentioned results may be caused by the diminished parent-child relationships and the period of family disruption that may both alter children's risk preferences. Overall, total investment in financial assets seems to be affected by childhood conditions to a greater extent than only direct investment. The results are robust to the inclusion of large gifts and inheritances and to changes in the assumptions underlying the allocation of stocks and bonds in mutual fund holdings.

This study exhibits some limitations. First, this paper only analyzed the family structure variables broadly. A deeper analysis of the studied independent variables may

provide more detailed results. Possible extensions include the difference between the number of brothers and the number of sisters, the gender of stepparents in the household and differences between single (biological) fathers and single (biological) mothers. Distinguishing between brothers and sisters as well as between fathers and mothers may be insightful, since gender differences in risk aversion may affect the current findings. In future research, this study may be extended to obtain a more comprehensive view of the childhood variables affecting portfolio decisions later in life. Second, SHARE is a survey questioned among European individuals aged 50 and older. Therefore, the results may not be perfectly generalizable to individuals in other age groups or from other parts of the world. This study may be extended to other age groups and countries in order to assess the generalizability of the results. Third, this research is constrained to either investment in bonds or stocks. However, there are large differences in riskiness between stocks. Further research may distinguish on the type of stocks and bonds in which individuals invest and may for instance include investment in stock indices and savings accounts.

Despite these limitations, the findings in this paper contribute to the existing literature on the effect of childhood conditions on financial portfolio decisions, since they provide extended knowledge on the long-term characteristics that affect people's interest in direct and total stockholdings versus bond holdings. It appears that family structure during childhood leaves long-term effects on individuals' risk preferences. In providing financial portfolio advice to investors, it could be important to consider the childhood characteristics regarding their siblings and parents. This contributes to the practical relevance of this paper.

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APPENDIX

Table A1: Variable names and descriptions

This table reports the names, the descriptions (including coding) and the sources of the variables used in the empirical analysis. The first column indicates whether the variable is a dependent variable, an independent variable or a control variable. The second column shows the variable names as presented in this paper. The third column describes the definitions of the variables and the fourth column indicates from which wave of SHARE the data has been obtained.

	Variable name	Description	Source
Dependent variables	Has stocks	Dummy = 1 if the respondent currently has any money directly invested in stocks or shares (listed or unlisted on the stock market), = 0 otherwise.	SHARE Wave 4
	Has bonds	Dummy = 1 if the respondent currently has any money directly invested in corporate or government bonds, = 0 otherwise.	SHARE Wave 4
	Has mutual funds*	Dummy = 1 if the respondent currently has any money invested in mutual funds or managed investment accounts, = 0 otherwise.	SHARE Wave 4
	Has stocks total	Dummy =1 if the respondent currently has any money directly or indirectly (through mutual funds or managed investment accounts) invested in stocks or shares (listed or unlisted on the stock market), = 0 otherwise.	SHARE Wave 4
	Has bonds total	Dummy = 1 if the respondent currently has any money directly or indirectly (through mutual funds or managed investment accounts) invested in corporate or government bonds, = 0 otherwise.	SHARE Wave 4
	Conditional amount in stocks	The amount the respondent currently has invested directly in stocks or shares, only reported for the positive observations.	SHARE Wave 4
	Conditional amount in bonds	The amount the respondent currently has invested directly in corporate or government bonds, only reported for the positive observations.	SHARE Wave 4
	Conditional amount in stocks total	The amount the respondent currently has invested directly or indirectly (through mutual funds or managed investment accounts) in stocks or shares, only reported for the positive observations.	SHARE Wave 4
	Conditional amount in bonds total	The amount the respondent currently has invested directly or indirectly (through mutual funds or managed investment accounts) in corporate or government bonds, only reported for the positive observations.	SHARE Wave 4
	Unconditional amount in stocks	The amount the respondent currently has invested directly in stocks or shares, = 0 if no direct investment in stocks or shares.	SHARE Wave 4
	Unconditional amount in bonds	The amount the respondent currently has invested directly in corporate or government bonds, = 0 if no direct investment in bonds.	SHARE Wave 4
	Unconditional total	The amount the respondent currently has invested directly or	SHARE Wave 4

	amount in stocks	indirectly (through mutual funds or managed investment accounts) in stocks or shares, = 0 if no direct or indirect investment in stocks or shares.	
	Unconditional total amount in bonds	The amount the respondent currently has invested directly or indirectly (through mutual funds or managed investment accounts) in corporate or government bonds, = 0 if no direct or indirect investment in bonds.	SHARE Wave 4
	Mutual funds – mostly stocks*	Dummy = 1 if the respondent holds mutual funds or managed investment accounts for which the investment is mostly in stocks, = 0 otherwise.	SHARE Wave 4
	Mutual funds – half stocks/ half bonds*	Dummy = 1 if the respondent holds mutual funds or managed investment accounts for which the investment is approximately half in stocks and half in bonds, = 0 otherwise.	SHARE Wave 4
	Mutual funds – mostly bonds*	Dummy = 1 if the respondent holds mutual funds or managed investment accounts for which the investment is mostly in bonds, = 0 otherwise.	SHARE Wave 4
Independent variables	Number of siblings	The number of siblings the respondent had during childhood approximated from adding the number of brothers the respondent currently has that are alive and the number of sisters the respondent currently has that are alive.	SHARE Wave 4
	Number of brothers*	The number of brothers the respondent currently has that are alive.	SHARE Wave 4
	Number of sisters*	The number of sisters the respondent currently has that are alive.	SHARE Wave 4
	Two parents*	Dummy = 1 if the respondent lived in the household with two parents when he/she was 10 years old. It includes both biological parents and adoptive/step/foster parents.	SHARELIFE Wave 3
	Single parent	Dummy = 1 if the respondent lived with only one parent in the household when he/she was 10 years old (biological or adoptive/step/foster), = 0 otherwise.	SHARELIFE Wave 3
	Both biological* parents	Dummy = 1 if the respondent lived with both biological parents in the household when he/she was 10 years old, = 0 otherwise.	SHARELIFE Wave 3
	At least one stepparent	Dummy = 1 if the respondent lived with at least one stepparent in the household when 10 years old, =0 otherwise	SHARELIFE Wave 3
Control variables	Female	Dummy = 1 if the respondent is female, = 0 otherwise.	SHARE Wave 4
	Age	Age of the respondent in years.	SHARE Wave 4
	High education	Dummy = 1 if the respondent scored 3 or higher on the International Standard Classification of Education (ISCED) that classifies the level of education in a range from 0 to 6, = 0 otherwise.	SHARE Wave 4
	Couple	Dummy = 1 if the respondent currently has a partner, = 0 otherwise	SHARE Wave 4
	Retired	Dummy = 1 if the respondent is currently retired, = 0 otherwise	SHARE Wave 4
	Employed	Dummy = 1 if the respondent is currently employed, = 0	SHARE Wave 4

		otherwise.	
	Total household income	Total yearly household income of the respondent in euros.	SHARE Wave 4
	Household net worth	Current net worth of the household of the respondent in euros.	SHARE Wave 4
	Austria	Dummy = 1 if the respondent lives in Austria, = 0 otherwise	SHARE Wave 4
	Germany	Dummy = 1 if the respondent lives in Germany, = 0 otherwise	SHARE Wave 4
	Sweden	Dummy = 1 if the respondent lives in Sweden, = 0 otherwise	SHARE Wave 4
	The Netherlands	Dummy = 1 if the respondent lives in The Netherlands, = 0 otherwise	SHARE Wave 4
	Spain	Dummy = 1 if the respondent lives in Spain, = 0 otherwise	SHARE Wave 4
	Italy	Dummy = 1 if the respondent lives in Italy, = 0 otherwise	SHARE Wave 4
	France	Dummy = 1 if the respondent lives in France, = 0 otherwise	SHARE Wave 4
	Denmark	Dummy = 1 if the respondent lives in Denmark, = 0 otherwise	SHARE Wave 4
	Switzerland	Dummy = 1 if the respondent lives in Switzerland, = 0 otherwise	SHARE Wave 4
	Belgium	Dummy = 1 if the respondent lives in Belgium, = 0 otherwise	SHARE Wave 4
	Czech Republic	Dummy = 1 if the respondent lives in the Czech Republic, = 0 otherwise	SHARE Wave 4
	Poland	Dummy = 1 if the respondent lives in Poland, = 0 otherwise	SHARE Wave 4
Robustness check	Received gifts	Dummy = 1 if the respondent has at least once in the past received a gift or inheritance of a value of €5,000 or more, = 0 otherwise.	SHARE Wave 4

*Note: Variables indicated by * are not used in the analysis.*

Table A2: Probit model of participation decision for total stockholding

The dependent variable analyzed in this table is 'has stocks total'. In columns (1) to (3), the model has been estimated for the hypotheses separately. In column (4) the results from the estimation including all independent variables are shown. The reported coefficients represent the probit estimates of the effect of a marginal change in the corresponding independent variables evaluated at their mean value on whether the respondents invested stocks, covering both direct stockholding and indirect stockholding. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Number of siblings	-0.006***			-0.006***
	(0.002)			(0.002)
Single parent		-0.018		-0.020
		(0.013)		(0.013)
At least one stepparent			-0.022	-0.023
			(0.016)	(0.016)
Female	-0.036***	-0.036***	-0.036***	-0.036***
	(0.005)	(0.005)	(0.005)	(0.005)

Age	0.014***	0.014***	0.014***	0.015***
	(0.005)	(0.005)	(0.005)	(0.005)
Age^2	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
High education	0.068***	0.070***	0.070***	0.068***
	(0.007)	(0.007)	(0.007)	(0.007)
Total household	0.004***	0.004***	0.004***	0.004***
income	(0.001)	(0.001)	(0.001)	(0.001)
Household net worth	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Couple	-0.001	-0.001	-0.001	-0.001
	(0.007)	(0.007)	(0.007)	(0.007)
Retired	0.020**	0.020**	0.020**	0.020**
	(0.009)	(0.009)	(0.009)	(0.009)
Employed	0.018*	0.019*	0.019*	0.018*
	(0.011)	(0.011)	(0.011)	(0.011)
Austria	-0.073***	-0.073***	-0.073***	-0.072***
	(0.020)	(0.020)	(0.020)	(0.020)
Sweden	0.202***	0.200***	0.201***	0.200***
	(0.015)	(0.015)	(0.015)	(0.015)
The Netherlands	0.014	0.006	0.007	0.012
	(0.014)	(0.014)	(0.014)	(0.014)
Spain	-0.116***	-0.120***	-0.120***	-0.118***
	(0.019)	(0.020)	(0.019)	(0.019)
Italy	-0.089***	-0.093***	-0.092***	-0.092***
	(0.016)	(0.016)	(0.016)	(0.016)
France	0.025	0.021	0.021	0.023
	(0.015)	(0.015)	(0.015)	(0.015)
Denmark	0.113***	0.111***	0.112***	0.111***
	(0.013)	(0.013)	(0.013)	(0.013)
Switzerland	0.039**	0.034**	0.035**	0.036**
	(0.016)	(0.016)	(0.016)	(0.016)
Belgium	0.044***	0.040***	0.040***	0.042***
	(0.013)	(0.013)	(0.013)	(0.013)
Czech Republic	-0.075***	-0.073***	-0.072***	-0.077***
	(0.018)	(0.019)	(0.018)	(0.019)
Poland	-0.181***	-0.183***	-0.183***	-0.182***
	(0.020)	(0.020)	(0.020)	(0.020)
Log likelihood	-4,063	-4,069	-4,069	-4,.061
Pseudo R-squared	0.238	0.237	0.237	0.239
Number of observations	12,144	12,144	12,144	12,144

Table A3: OLS regression on the amount in stocks held directly

The dependent variable analyzed in this table is 'conditional amount in stocks'. In columns (1) to (3), the model has been estimated for the hypotheses separately. In column (4) the results from the estimation including all independent variables are shown. The reported coefficients represent the OLS estimates. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Constant	-226.757*	-227.650*	-222.896*	-235.228*
	(131.509)	(131.813)	(132.249)	(133.197)
Number of siblings	-2.547***			-2.585***
	(0.902)			(0.901)
Single parent		-9.264		-10.028
		(7.718)		(7.663)
At least one stepparent			-3.781	-3.789
			(8.544)	(8.594)
Female	-7.502*	-7.463*	-7.452*	-7.547*
	(3.982)	(3.980)	(3.983)	(3.980)
Age	7.058*	6.890*	6.729*	7.323*
	(3.681)	(3.675)	(3.681)	(3.735)
Age^2	-0.046*	-0.044*	-0.043*	-0.048*
	(0.026)	(0.025)	(0.025)	(0.026)
High education	4.484	5.340	5.362	4.539
	(3.702)	(3.752)	(3.759)	(3.714)
Total household	1.222**	1.263**	1.263**	1.217**
income	(0.596)	(0.598)	(0.597)	(0.597)
Household net worth	0.473***	0.474***	0.474***	0.471***
	(0.073)	(0.073)	(0.073)	(0.073)
Couple	-7.449	-7.692	-7.619	-7.262
	(4.744)	(4.723)	(4.741)	(4.761)
Retired	-0.711	-2.014	-1.686	-1.032
	(6.071)	(6.105)	(6.094)	(6.078)
Employed	0.044	-0.560	-0.634	0.227
	(6.057)	(6.046)	(6.062)	(6.061)
Austria	-30.218**	-28.944**	-28.899**	-29.780**
	(13.024)	(12.933)	(12.959)	(12.961)
Sweden	-10.376	-11.830	-11.007	-11.111
	(13.144)	(13.136)	(13.099)	(13.179)
The Netherlands	-8.322	-13.281	-12.176	-9.654
	(13.129)	(13.132)	(12.997)	(13.283)
Spain	-27.322*	-28.556**	-28.290*	-27.821*
	(14.586)	(14.506)	(14.474)	(14.652)
Italy	-30.821**	-31.868**	-31.111**	-31.747**

	(13.135)	(13.196)	(13.118)	(13.215)
France	-29.845**	-31.751**	-31.197**	-30.653**
	(13.341)	(13.316)	(13.296)	(13.397)
Denmark	-19.961	-21.852*	-20.888*	-21.007*
	(12.599)	(12.641)	(12.544)	(12.693)
Switzerland	-16.030	-18.648	-17.645	-17.025
	(14.654)	(14.661)	(14.602)	(14.711)
Belgium	-9.836	-12.613	-12.167	-10.430
	(13.591)	(13.513)	(13.459)	(13.662)
Czech Republic	-25.125**	-24.193**	-23.837**	-25.469**
	(11.975)	(12.014)	(11.973)	(11.993)
Poland	-22.697*	-20.829*	-21.610*	-22.191*
	(12.119)	(12.055)	(12.143)	(12.071)
R-squared	0.187	0.185	0.184	0.187
Number of observations	1,366	1,366	1,366	1,366

Note: All monetary amounts are PPP-adjusted and in thousands of euros.

Table A4: OLS regression on the total amount of stocks

The dependent variable analyzed in this table is 'conditional total amount in stocks'. In columns (1) to (3), the model has been estimated for the hypotheses separately. In column (4) the results from the estimation including all independent variables are shown. The reported coefficients represent the OLS estimates. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Constant	-234.705	-234.045	-231.764	-244.616
	(149.432)	(150.202)	(150.498)	(151.411)
Number of siblings	-3.010**			-3.039**
	(1.175)			(1.173)
Single parent		-8.433		-9.425
		(9.411)		(9.355)
At least one stepparent			-8.412	-8.336
			(8.969)	(9.035)
Female	-11.960***	-11.906***	-11.917***	-12.021***
	(4.492)	(4.491)	(4.493)	(4.490)
Age	7.535*	7.281*	7.189*	7.835*
	(4.158)	(4.172)	(4.175)	(4.222)
Age^2	-0.051*	-0.049*	-0.048*	-0.053*
	(0.028)	(0.028)	(0.029)	(0.029)
High education	4.503	5.509	5.586	4.612
	(4.429)	(4.513)	(4.519)	(4.443)

Total household income	1.372**	1.422**	1.420**	1.366**
	(0.566)	(0.568)	(0.567)	(0.568)
Household net worth	0.627***	0.629***	0.629***	0.626***
	(0.084)	(0.085)	(0.085)	(0.084)
Couple	-11.312**	-11.613**	-11.382**	-10.979**
	(5.142)	(5.125)	(5.148)	(5.160)
Retired	1.945	0.493	0.803	1.653
	(7.076)	(7.070)	(7.035)	(7.103)
Employed	-1.605	-2.351	-2.361	-1.380
	(6.790)	(6.824)	(6.821)	(6.813)
Austria	-35.116**	-33.663**	-33.305**	-34.396**
	(14.153)	(14.099)	(14.126)	(14.136)
Sweden	-4.433	-5.947	-5.108	-5.039
	(13.059)	(13.047)	(13.012)	(13.096)
The Netherlands	-8.449	-13.985	-13.100	-9.828
	(13.051)	(12.941)	(12.803)	(13.205)
Spain	-31.284**	-32.641**	-32.541**	-31.892**
	(15.253)	(15.166)	(15.126)	(15.317)
Italy	-35.288***	-36.306***	-35.688***	-36.227***
	(12.994)	(13.066)	(12.968)	(13.057)
France	-34.735***	-36.808***	-36.446***	-35.635***
	(13.057)	(13.018)	(12.994)	(13.113)
Denmark	-20.956*	-22.927*	-22.059*	-21.952*
	(12.384)	(12.419)	(12.314)	(12.480)
Switzerland	-10.602	-13.432	-12.477	-11.501
	(15.030)	(15.023)	(14.955)	(15.106)
Belgium	0.002	-3.139	-2.825	-0.651
	(14.216)	(14.106)	(14.045)	(14.286)
Czech Republic	-22.520*	-21.329*	-20.968*	-22.803*
	(11.825)	(11.877)	(11.825)	(11.837)
Poland	-20.722*	-18.684	-19.598	-20.437*
	(11.937)	(11.891)	(11.947)	(11.921)
R-squared	0.235	0.233	0.233	0.236
Number of observations	1,366	1,366	1,366	1,366

Note: All monetary amounts are PPP-adjusted and in thousands of euros.

Table A5: Tobit model on the total amount held in stocks

The dependent variable analyzed in this Tobit regression is 'unconditional total amount in stocks'. In columns (1) to (4), the reported coefficients represent the Tobit estimates of the effect of a marginal change in the corresponding independent variables evaluated at their mean value on the total amount invested in stocks, conditional on a positive value that has been invested in stocks either directly or indirectly. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Number of siblings	-3.258***			-3.278***
	(1.103)			(1.105)
Single parent		-2.070		-3.351
		(8.467)		(8.458)
At least one stepparent			-9.935	-10.095
			(10.448)	(10.417)
Female	-31.656***	-31.633***	-31.663***	-31.685***
	(4.129)	(4.135)	(4.135)	(4.128)
Age	9.579***	9.182***	9.211***	9.690***
	(3.513)	(3.498)	(3.506)	(3.526)
Age^2	-0.071***	-0.067***	-0.067***	-0.072***
	(0.025)	(0.024)	(0.024)	(0.025)
High education	35.784***	36.921***	36.937***	35.766***
	(5.112)	(5.165)	(5.167)	(5.108)
Total household income	2.848***	2.881***	2.880***	2.846***
	(0.448)	(0.452)	(0.452)	(0.448)
Household net worth	0.532***	0.532***	0.532***	0.532***
	(0.106)	(0.107)	(0.107)	(0.106)
Couple	-9.009*	-9.046*	-8.984*	-8.924*
	(4.814)	(4.818)	(4.818)	(4.812)
Retired	15.583**	15.393**	15.401**	15.553**
	(7.029)	(7.036)	(7.040)	(7.026)
Employed	10.930	11.026	10.974	10.962
	(7.973)	(7.992)	(7.987)	(7.973)
Austria	-32.875**	-32.869**	-32.786**	-32.699**
	(13.986)	(14.021)	(14.031)	(13.982)
Sweden	110.000***	109.476***	109.677***	109.761***
	(10.849)	(10.862)	(10.842)	(10.864)
The Netherlands	13.525	9.266	9.163	12.942
	(9.910)	(9.849)	(9.824)	(9.937)
Spain	-64.010***	-65.481***	-65.741***	-64.571***
	(15.707)	(15.779)	(15.767)	(15.753)
Italy	-38.025***	-39.104***	-39.285***	-38.630***
	(11.489)	(11.551)	(11.528)	(11.531)
France	10.673	8.922	8.732	10.196
	(10.901)	(10.877)	(10.870)	(10.908)
Denmark	82.193***	81.302***	81.340***	81.747***
	(9.923)	(9.934)	(9.891)	(9.946)
Switzerland	34.960***	33.008***	32.978***	34.431***
	(12.065)	(12.021)	(12.003)	(12.092)

Belgium	35.576***	33.348***	33.177***	35.029***
	(10.208)	(10.184)	(10.136)	(10.251)
Czech Republic	-44.251***	-42.554***	-42.625***	-44.632***
	(13.341)	(13.332)	(13.312)	(13.383)
Poland	-90.574***	-91.175***	-91.368***	-90.959***
	(16.290)	(16.376)	(16.344)	(16.338)
Log likelihood	-19,737	-19,741	-19,741	-19,737
Pseudo R-squared	0.047	0.047	0.047	0.047
Number of observations	12,144	12,144	12,144	12,144

Note: All monetary amounts are PPP-adjusted and in thousands of euros.

Table A6: Probit model of participation decision in total bondholding

The dependent variable analyzed in this table is 'has bonds total'. In columns (1) to (3), the model has been estimated for the hypotheses separately. In column (4) the results from the estimation including all independent variables are shown. The reported coefficients represent the probit estimates of the effect of a marginal change in the corresponding independent variables evaluated at their mean value on whether the respondents invested bonds, covering both direct bond holding and indirect bond holding. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Number of siblings	-0.006***			-0.006***
	(0.001)			(0.001)
Single parent		-0.021**		-0.024**
		(0.011)		(0.011)
At least one stepparent			-0.033**	-0.034**
			(0.015)	(0.015)
Female	-0.011**	-0.011**	-0.011**	-0.011***
	(0.004)	(0.004)	(0.004)	(0.004)
Age	0.003	0.003	0.003	0.004
	(0.004)	(0.004)	(0.004)	(0.004)
Age^2	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
High education	0.044***	0.047***	0.047***	0.044***
	(0.006)	(0.006)	(0.006)	(0.006)
Total household income	0.002***	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
Household net worth	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Couple	-0.004	-0.005	-0.005	-0.004
	(0.006)	(0.006)	(0.006)	(0.006)
Retired	0.031***	0.032***	0.032***	0.031***

	(0.008)	(0.008)	(0.008)	(0.008)
Employed	0.019**	0.020**	0.019**	0.019**
	(0.009)	(0.009)	(0.009)	(0.009)
Austria	-0.069***	-0.069***	-0.069***	-0.068***
	(0.016)	(0.016)	(0.016)	(0.016)
Sweden	0.056***	0.054***	0.056***	0.054***
	(0.011)	(0.011)	(0.011)	(0.011)
The Netherlands	-0.072***	-0.080***	-0.079***	-0.075***
	(0.013)	(0.013)	(0.013)	(0.013)
Spain	-0.139***	-0.142***	-0.142***	-0.141***
	(0.018)	(0.018)	(0.018)	(0.018)
Italy	0.003	0.000	0.000	0.000
	(0.011)	(0.011)	(0.011)	(0.011)
France	-0.050***	-0.054***	-0.054***	-0.052***
	(0.014)	(0.014)	(0.014)	(0.014)
Denmark	0.012	0.009	0.010	0.009
	(0.011)	(0.011)	(0.011)	(0.011)
Switzerland	0.006	0.001	0.002	0.003
	(0.012)	(0.012)	(0.012)	(0.012)
Belgium	-0.001	-0.005	-0.005	-0.003
	(0.011)	(0.011)	(0.011)	(0.011)
Czech Republic	-0.140***	-0.138***	-0.138***	-0.142***
	(0.018)	(0.018)	(0.018)	(0.018)
Poland	-0.192***	-0.195***	-0.195***	-0.194***
	(0.018)	(0.019)	(0.019)	(0.018)
Log likelihood	-3,640	-3,647	-3,646	-3,635
Pseudo R-squared	0.161	0.160	0.160	0.163
Number of observations	12,144	12,144	12,144	12,144

Table A7: OLS regression on the amount in bonds held directly

The dependent variable analyzed in this table is 'conditional amount in bonds'. In columns (1) to (3), the model has been estimated for the hypotheses separately. In column (4) the results from the estimation including all independent variables are shown. The reported coefficients represent the OLS estimates. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Constant	-193.737	-201.356	-195.803	-197.233
	(122.018)	(122.614)	(122.212)	(122.611)
Number of siblings	-1.374			-1.487

	(1.436)			(1.442)
Single parent		-9.150		-10.023
		(7.948)		(7.912)
At least one stepparent			-1.586	-2.584
			(14.254)	(14.299)
Female	-3.707	-3.340	-3.396	-3.647
	(5.633)	(5.593)	(5.589)	(5.636)
Age	5.809*	5.880*	5.720*	5.923*
	(3.457)	(3.466)	(3.457)	(3.473)
Age^2	-0.038	-0.038	-0.037	-0.039
	(0.024)	(0.024)	(0.024)	(0.024)
High education	1.587	1.865	1.997	1.477
	(5.098)	(5.079)	(5.084)	(5.112)
Total household	0.849**	0.859**	0.861**	0.847**
income	(0.382)	(0.385)	(0.384)	(0.383)
Household net worth	0.344***	0.346***	0.346***	0.345***
	(0.070)	(0.069)	(0.069)	(0.070)
Couple	1.783	2.023	2.031	1.780
	(5.117)	(5.130)	(5.131)	(5.126)
Retired	5.379	5.359	5.198	5.711
	(6.725)	(6.786)	(6.725)	(6.812)
Employed	6.206	6.417	6.009	6.651
	(8.891)	(8.995)	(8.907)	(8.993)
Austria	-5.279	-3.134	-4.995	-3.403
	(18.229)	(18.360)	(18.328)	(18.288)
Sweden	-29.484***	-30.071***	-29.857***	-29.675***
	(7.389)	(7.367)	(7.319)	(7.443)
The Netherlands	29.449*	27.580*	28.327*	28.936*
	(15.329)	(15.223)	(15.230)	(15.429)
Spain	-16.421	-16.373	-17.022	-15.762
	(14.007)	(14.145)	(14.289)	(13.894)
Italy	5.371	4.680	4.976	5.033
	(9.224)	(9.192)	(9.177)	(9.249)
France	-28.835**	-29.137**	-29.258**	-28.787**
	(13.600)	(13.260)	(13.468)	(13.443)
Denmark	1.712	0.782	1.226	1.220
	(8.996)	(8.943)	(8.897)	(9.037)
Switzerland	8.430	7.069	7.625	7.789
	(11.124)	(11.039)	(10.978)	(11.201)
Belgium	9.525	8.981	8.867	9.680
	(10.386)	(10.352)	(10.353)	(10.409)
Czech Republic	-25.676***	-24.803***	-24.227***	-26.568***
	(8.143)	(8.028)	(7.968)	(8.250)
Poland	-26.037***	-26.685***	-26.170***	-26.669***
	(7.487)	(7.536)	(7.504)	(7.565)

R-squared	0.196	0.196	0.195	0.197
Number of observations	711	711	711	711

Note: All monetary amounts are PPP-adjusted and in thousands of euros.

Table A8: OLS regression on the total amount in bonds

The dependent variable analyzed in this table is 'conditional total amount in bonds'. In columns (1) to (3), the model has been estimated for the hypotheses separately. In column (4) the results from the estimation including all independent variables are shown. The reported coefficients represent the OLS estimates. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Constant	-149.374	-160.601	-161.233	-163.066
	(138.880)	(139.565)	(138.520)	(138.432)
Number of siblings	-1.586			-1.682
	(1.828)			(1.825)
Single parent		-12.737		-13.407
		(9.640)		(9.501)
At least one stepparent			14.071	12.658
			(19.848)	(19.733)
Female	-9.446	-8.944	-9.138	-9.304
	(5.910)	(5.911)	(5.898)	(5.912)
Age	4.944	5.101	5.113	5.347
	(3.873)	(3.879)	(3.850)	(3.863)
Age^2	-0.034	-0.035	-0.035	-0.037
	(0.027)	(0.027)	(0.027)	(0.027)
High education	-1.405	-1.155	-1.114	-1.779
	(6.004)	(6.090)	(6.092)	(6.022)
Total household	1.063**	1.077**	1.078**	1.060**
income	(0.428)	(0.431)	(0.430)	(0.429)
Household net worth	0.482***	0.484***	0.484***	0.482***
	(0.088)	(0.087)	(0.088)	(0.088)
Couple	-0.841	-0.537	-0.718	-0.886
	(5.606)	(5.602)	(5.612)	(5.602)
Retired	7.428	7.502	6.698	7.419
	(7.792)	(7.833)	(7.729)	(7.817)
Employed	1.061	1.522	0.849	1.751
	(10.072)	(10.196)	(10.100)	(10.173)
Austria	-3.643	-1.180	-2.942	-1.030
	(16.754)	(16.485)	(16.746)	(16.496)
Sweden	-27.149***	-28.055***	-27.692***	-27.809***
	(7.436)	(7.424)	(7.350)	(7.530)

The Netherlands	25.694	23.346	23.774	24.085
	(15.648)	(15.520)	(15.616)	(15.899)
Spain	7.087	6.319	6.527	7.564
	(25.137)	(25.150)	(25.324)	(24.972)
Italy	1.151	0.139	0.912	0.693
	(9.205)	(9.165)	(9.155)	(9.274)
France	-17.802	-18.122	-17.625	-17.578
	(17.952)	(17.723)	(17.882)	(17.821)
Denmark	8.533	7.188	8.184	7.852
	(9.071)	(9.030)	(8.972)	(9.163)
Switzerland	10.085	8.245	9.488	9.430
	(12.588)	(12.476)	(12.385)	(12.702)
Belgium	17.494	16.709	16.683	17.466
	(11.007)	(11.058)	(11.014)	(10.999)
Czech Republic	-24.991***	-24.346***	-22.828***	-25.839***
	(8.401)	(8.302)	(8.219)	(8.535)
Poland	-25.221***	-23.418***	-24.706***	-23.315***
	(7.368)	(7.426)	(7.352)	(7.419)
R-squared	0.231	0.231	0.231	0.233
Number of observations	756	756	756	756

Note: All monetary amounts are PPP-adjusted and in thousands of euros.

Table A9: Tobit model on the amount held directly in bonds

The dependent variable analyzed in this Tobit regression is 'unconditional amount in bonds'. In columns (1) to (4), the reported coefficients represent the Tobit estimates of the effect of a marginal change in the corresponding independent variables evaluated at their mean value on the amount invested in bonds, conditional on a positive value that has been invested in bonds. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Number of siblings	-3.048**			-3.176**
	(1.337)			(1.344)
Single parent		-8.972		-10.947
		(10.132)		(10.132)
At least one stepparent			-32.084*	-33.113**
			(16.791)	(16.747)
Female	-7.261	-7.021	-7.077	-7.286
	(4.746)	(4.746)	(4.746)	(4.745)
Age	6.882*	6.718*	6.557*	7.094*
	(3.761)	(3.767)	(3.764)	(3.788)
Age^2	-0.043	-0.041	-0.040	-0.044*
	(0.026)	(0.026)	(0.026)	(0.026)

High education	33.246***	34.340***	34.509***	33.239***
	(6.129)	(6.132)	(6.143)	(6.124)
Total household	1.571***	1.598***	1.600***	1.569***
income	(0.387)	(0.389)	(0.388)	(0.387)
Household net worth	0.415***	0.414***	0.414***	0.414***
	(0.076)	(0.076)	(0.076)	(0.076)
Couple	-7.698	-7.609	-7.615	-7.624
	(5.507)	(5.507)	(5.510)	(5.509)
Retired	34.650***	34.994***	35.157***	34.924***
	(8.768)	(8.775)	(8.783)	(8.763)
Employed	32.471***	33.054***	32.715***	32.617***
	(10.395)	(10.415)	(10.403)	(10.394)
Austria	-49.633***	-49.426***	-49.980***	-49.372***
	(15.650)	(15.648)	(15.664)	(15.627)
Sweden	2.856	1.818	2.446	2.089
	(9.899)	(9.928)	(9.887)	(9.940)
The Netherlands	-57.585***	-61.784***	-61.537***	-58.742***
	(12.506)	(12.429)	(12.432)	(12.553)
Spain	-126.591***	-128.161***	-128.832***	-127.913***
	(24.871)	(24.966)	(24.980)	(24.909)
Italy	33.476***	31.951***	31.651***	31.819***
	(10.090)	(10.075)	(10.070)	(10.108)
France	-87.538***	-89.208***	-89.694***	-88.727***
	(16.208)	(16.200)	(16.211)	(16.234)
Denmark	15.665	14.236	14.500	14.389
	(9.615)	(9.619)	(9.588)	(9.638)
Switzerland	15.557	13.119	13.072	13.846
	(11.565)	(11.516)	(11.500)	(11.579)
Belgium	-5.613	-7.843	-8.144	-7.005
	(10.147)	(10.126)	(10.117)	(10.209)
Czech Republic	-92.838***	-91.424***	-91.620***	-94.316***
	(16.970)	(16.974)	(16.969)	(16.998)
Poland	-138.530***	-139.771***	-140.020***	-139.834***
	(21.953)	(21.996)	(21.998)	(21.981)
Log likelihood	-10,769	-10,771	-10,769	-10,766
Pseudo R-squared	0.037	0.037	0.037	0.037
Number of observations	12,144	12,144	12,144	12,144

Note: All monetary amounts are PPP-adjusted and in thousands of euros.

Table A10: Tobit model on the total amount held in bonds

The dependent variable analyzed in this Tobit regression is 'unconditional total amount in bonds'. In columns (1) to (4), the reported coefficients represent the Tobit estimates of the effect of a marginal change in the corresponding independent

variables evaluated at their mean value on the total amount invested in bonds, conditional on a positive value that has been invested in bonds either directly or indirectly. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Number of siblings	-3.340**			-3.481**
	(1.534)			(1.540)
Single parent		-9.826		-11.988
		(11.458)		(11.449)
At least one stepparent			-35.047*	-36.175*
			(19.312)	(19.253)
Female	-9.361*	-9.100*	-9.162*	-9.390*
	(5.361)	(5.362)	(5.363)	(5.361)
Age	7.263*	7.081*	6.906*	7.492*
	(4.188)	(4.193)	(4.192)	(4.218)
Age^2	-0.045	-0.043	-0.042	-0.047
	(0.029)	(0.029)	(0.029)	(0.029)
High education	37.028***	38.219***	38.406***	37.022***
	(6.843)	(6.859)	(6.870)	(6.838)
Total household	1.801***	1.830***	1.832***	1.799***
income	(0.443)	(0.445)	(0.444)	(0.443)
Household net worth	0.473***	0.471***	0.472***	0.472***
	(0.087)	(0.088)	(0.088)	(0.087)
Couple	-8.919	-8.822	-8.829	-8.841
	(6.192)	(6.192)	(6.196)	(6.195)
Retired	40.058***	40.420***	40.604***	40.364***
	(9.924)	(9.929)	(9.940)	(9.921)
Employed	35.593***	36.222***	35.855***	35.756***
	(11.655)	(11.667)	(11.657)	(11.653)
Austria	-57.923***	-57.680***	-58.308***	-57.645***
	(17.232)	(17.228)	(17.245)	(17.206)
Sweden	4.395	3.258	3.947	3.559
	(11.115)	(11.144)	(11.101)	(11.158)
The Netherlands	-65.342***	-69.945***	-69.677***	-66.616***
	(14.086)	(13.966)	(13.975)	(14.136)
Spain	-143.125***	-144.844***	-145.595***	-144.591***
	(28.350)	(28.441)	(28.459)	(28.391)
Italy	36.654***	34.979***	34.651***	34.841***
	(11.177)	(11.161)	(11.159)	(11.205)
France	-98.497***	-100.323***	-100.866***	-99.813***
	(18.232)	(18.210)	(18.223)	(18.258)
Denmark	18.895*	17.327	17.617	17.500
	(10.810)	(10.813)	(10.779)	(10.835)
Switzerland	19.520	16.847	16.798	17.650

	(13.150)	(13.077)	(13.057)	(13.160)
Belgium	-4.052	-6.499	-6.829	-5.580
	(11.367)	(11.352)	(11.345)	(11.448)
Czech Republic	-103.930***	-102.370***	-102.589***	-105.558***
	(19.092)	(19.098)	(19.096)	(19.116)
Poland	-155.451***	-156.798***	-157.086***	-156.898***
	(24.762)	(24.798)	(24.805)	(24.790)
Log likelihood	-10,851	-10,853	-10,852	-10,849
Pseudo R-squared	0.037	0.037	0.037	0.037
Number of observations	12,144	12,144	12,144	12,144

Note: All monetary amounts are PPP-adjusted and in thousands of euros.

Table A11: Probit/Tobit models for direct/total stockholding – Robustness check

In column (1), the dependent variable 'has stocks' is analyzed. In column (2), the dependent variable 'has stocks total' has been analyzed. In column (3), the dependent variable 'unconditional amount in stocks' has been analyzed and in column (4), the dependent variable 'unconditional total amount in stocks' has been analyzed. The reported coefficients represent the probit and Tobit estimates of the effect of a marginal change in the corresponding independent variables evaluated at their mean value on the corresponding dependent variable. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Probit – direct stockholding**	**(2) Probit – total stockholding**	**(3) Tobit – direct stockholding**	**(4) Tobit – total stockholding**
Number of siblings	-0.002*	-0.006***	-2.727***	-3.213***
	(0.001)	(0.002)	(0.918)	(1.101)
Single parent	0.000	-0.019	-3.507	-3.199
	(0.010)	(0.013)	(7.101)	(8.415)
At least one stepparent	-0.007	-0.023	-6.810	-9.721
	(0.013)	(0.016)	(9.107)	(10.440)
Female	-0.034***	-0.035***	-25.989***	-31.534***
	(0.004)	(0.005)	(3.546)	(4.121)
Age	0.009**	0.014***	8.347***	9.620***
	(0.004)	(0.005)	(3.065)	(3.510)
Age^2	0.000***	0.000***	-0.060***	-0.071***
	(0.000)	(0.000)	(0.021)	(0.025)
High education	0.041***	0.067***	30.472***	35.433***
	(0.005)	(0.007)	(4.404)	(5.085)
Total household	0.003***	0.004***	2.415***	2.826***
income	(0.000)	(0.001)	(0.414)	(0.447)
Household net worth	0.000***	0.001***	0.432***	0.526***
	(0.000)	(0.000)	(0.086)	(0.105)

Couple	-0.007	-0.001	-6.911*	-8.948*
	(0.005)	(0.007)	(4.147)	(4.803)
Retired	0.015**	0.020**	12.219**	15.351**
	(0.008)	(0.009)	(5.921)	(7.018)
Employed	0.012	0.017	9.335	10.345
	(0.008)	(0.010)	(6.764)	(7.923)
Austria	-0.028*	-0.072***	-28.088**	-32.476**
	(0.016)	(0.020)	(12.194)	(13.990)
Sweden	0.139***	0.195***	90.229***	108.033***
	(0.011)	(0.014)	(9.477)	(10.790)
The Netherlands	0.018*	0.010	10.310	12.314
	(0.011)	(0.014)	(8.719)	(9.936)
Spain	-0.062***	-0.119***	-55.577***	-65.002***
	(0.015)	(0.019)	(13.510)	(15.709)
Italy	-0.033***	-0.091***	-33.181***	-38.384***
	(0.012)	(0.016)	(10.142)	(11.540)
France	0.026**	0.022	8.574	9.667
	(0.012)	(0.015)	(9.528)	(10.895)
Denmark	0.114***	0.110***	69.763***	81.377***
	(0.011)	(0.013)	(8.707)	(9.908)
Switzerland	0.039***	0.035**	26.379**	33.870***
	(0.012)	(0.016)	(10.276)	(12.046)
Belgium	0.039***	0.038***	25.463***	33.446***
	(0.010)	(0.013)	(8.702)	(10.168)
Czech Republic	-0.041***	-0.075***	-38.875***	-44.000***
	(0.015)	(0.018)	(11.671)	(13.380)
Poland	-0.096***	-0.179***	-78.320***	-90.123***
	(0.016)	(0.020)	(14.271)	(16.323)
Received gifts	0.021***	0.047***	14.934***	16.911**
	(0.007)	(0.010)	(5.675)	(6.632)
Log likelihood	-3,329	-4,046	-19,521	-19,732
Pseudo R-squared	0.220	0.242	0.046	0.047
Number of observations	12,144	12,144	12,144	12,144

Note: All monetary amounts are PPP-adjusted and in thousands of euros.

Table A12: Probit/Tobit models for direct/total bondholding – Robustness check

In column (1), the dependent variable 'has bonds' is analyzed. In column (2), the dependent variable 'has bonds total' has been analyzed. In column (3), the dependent variable 'unconditional amount in bonds' has been analyzed and in column (4), the dependent variable 'unconditional total amount in bonds' has been analyzed. The reported coefficients represent the probit and Tobit estimates of the effect of a marginal change in the corresponding independent variables evaluated at their mean value on the corresponding dependent variable. The cluster-robust standard errors are reported in parentheses. ***, **

and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Probit – direct bondholding**	**(2) Probit – total bondholding**	**(3) Tobit – direct bondholding**	**(4) Tobit – total bondholding**
Number of siblings	-0.002**	-0.006***	-3.136**	-3.437**
	(0.001)	(0.001)	(1.344)	(1.540)
Single parent	-0.005	-0.023**	-10.289	-11.258
	(0.006)	(0.010)	(10.089)	(11.407)
At least one stepparent	-0.021**	-0.034**	-32.896*	-35.929*
	(0.010)	(0.014)	(16.751)	(19.271)
Female	-0.004	-0.011**	-7.252	-9.355*
	(0.003)	(0.004)	(4.742)	(5.359)
Age	0.003	0.003	6.941*	7.321*
	(0.002)	(0.004)	(3.771)	(4.198)
Age^2	0.000	0.000	-0.043	-0.045
	(0.000)	(0.000)	(0.026)	(0.029)
High education	0.020***	0.043***	32.850***	36.594***
	(0.004)	(0.006)	(6.108)	(6.814)
Total household	0.001***	0.002***	1.528***	1.754***
income	(0.000)	(0.000)	(0.386)	(0.443)
Household net worth	0.000***	0.000***	0.407***	0.465***
	(0.000)	(0.000)	(0.074)	(0.086)
Couple	-0.006	-0.005	-7.694	-8.926
	(0.003)	(0.006)	(5.511)	(6.197)
Retired	0.021***	0.031***	34.968***	40.415***
	(0.005)	(0.008)	(8.750)	(9.906)
Employed	0.018***	0.017*	31.370***	34.378***
	(0.006)	(0.009)	(10.329)	(11.590)
Austria	-0.031***	-0.067***	-48.828***	-57.051***
	(0.010)	(0.016)	(15.602)	(17.175)
Sweden	0.006	0.050***	-0.383	0.822
	(0.006)	(0.011)	(9.965)	(11.180)
The Netherlands	-0.042***	-0.076***	-59.229***	-67.162***
	(0.008)	(0.012)	(12.569)	(14.158)
Spain	-0.077***	-0.139***	-127.737***	-144.416***
	(0.012)	(0.018)	(24.662)	(28.114)
Italy	0.019***	0.001	32.367***	35.454***
	(0.006)	(0.011)	(10.114)	(11.214)
France	-0.053***	-0.053***	-89.387***	-100.557***
	(0.010)	(0.014)	(16.271)	(18.302)
Denmark	0.009	0.009	13.968	17.036
	(0.006)	(0.010)	(9.627)	(10.824)
Switzerland	0.005	0.002	12.542	16.213
	(0.007)	(0.012)	(11.501)	(13.045)

Belgium	-0.008	-0.007	-8.986	-7.771
	(0.006)	(0.011)	(10.189)	(11.437)
Czech Republic	-0.056***	-0.140***	-93.354***	-104.496***
	(0.010)	(0.018)	(16.970)	(19.079)
Poland	-0.085***	-0.191***	-139.134***	-156.143***
	(0.012)	(0.018)	(21.901)	(24.694)
Received gifts	0.015***	0.042***	23.903***	26.512***
	(0.005)	(0.008)	(7.429)	(8.554)
Log likelihood	-2,311	-3,616	-10,760	-10,844
Pseudo R-squared	0.147	0.167	0.038	0.038
Number of observations	12,144	12,144	12,144	12,144

Note: All monetary amounts are PPP-adjusted and in thousands of euros.

Table A13: Tobit model for total amount held in stocks – Robustness check

The dependent variable analyzed in this Tobit regression is 'unconditional total amount in stocks'. In this table, the total amount in stocks has been calculated under a different assumption than in the main analysis (see subsection 6.2). In columns (1) to (4), the reported coefficients represent the Tobit estimates of the effect of a marginal change in the corresponding independent variables evaluated at their mean value on the total amount invested in bonds, conditional on a positive value that has been invested in bonds either directly or indirectly. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Number of siblings	-3.153***			-3.172***
	(1.070)			(1.071)
Single parent		-2.026		-3.264
		(8.242)		(8.234)
At least one stepparent			-9.462	-9.619
			(10.205)	(10.175)
Female	-30.776***	-30.753***	-30.782***	-30.804***
	(4.002)	(4.008)	(4.008)	(4.001)
Age	9.363***	8.980***	9.006***	9.471***
	(3.429)	(3.413)	(3.421)	(3.441)
Age^2	-0.069***	-0.066***	-0.066***	-0.070***
	(0.024)	(0.024)	(0.024)	(0.024)
High education	34.830***	35.931***	35.946***	34.813***
	(4.974)	(5.024)	(5.026)	(4.970)
Total household	2.793***	2.825***	2.824***	2.791***
income	(0.442)	(0.445)	(0.445)	(0.441)
Household net worth	0.516***	0.516***	0.516***	0.516***
	(0.102)	(0.103)	(0.103)	(0.102)

Couple	-8.786*	-8.821*	-8.762*	-8.705*
	(4.701)	(4.705)	(4.704)	(4.699)
Retired	14.999**	14.817**	14.824**	14.971**
	(6.829)	(6.836)	(6.840)	(6.826)
Employed	10.782	10.876	10.826	10.814
	(7.778)	(7.797)	(7.791)	(7.779)
Austria	-32.097**	-32.091**	-32.013**	-31.928**
	(13.659)	(13.692)	(13.702)	(13.655)
Sweden	106.701***	106.191***	106.386***	106.468***
	(10.511)	(10.524)	(10.505)	(10.526)
The Netherlands	13.017	8.894	8.800	12.456
	(9.690)	(9.636)	(9.611)	(9.719)
Spain	-62.443***	-63.866***	-64.112***	-62.981***
	(15.305)	(15.374)	(15.361)	(15.350)
Italy	-37.152***	-38.198***	-38.367***	-37.734***
	(11.233)	(11.294)	(11.271)	(11.276)
France	10.319	8.623	8.445	9.862
	(10.652)	(10.630)	(10.623)	(10.660)
Denmark	80.151***	79.285***	79.327***	79.719***
	(9.665)	(9.677)	(9.635)	(9.688)
Switzerland	33.572***	31.680***	31.656***	33.062***
	(11.719)	(11.682)	(11.664)	(11.748)
Belgium	34.479***	32.320***	32.161***	33.953***
	(9.936)	(9.919)	(9.872)	(9.981)
Czech Republic	-43.333***	-41.691***	-41.756***	-43.701***
	(13.023)	(13.017)	(12.997)	(13.065)
Poland	-88.430***	-89.011***	-89.192***	-88.799***
	(15.891)	(15.974)	(15.941)	(15.938)
Log likelihood	-19,704	-19,708	-19.708	-19.703
Pseudo R-squared	0.047	0.047	0.047	0.047
Number of observations	12,144	12,144	12,144	12,144

Note: All monetary amounts are PPP-adjusted and in thousands of euros.

Table A14: Tobit model for total amount held in bonds – Robustness check

The dependent variable analyzed in this Tobit regression is 'unconditional total amount in bonds'. In this table, the total amount in stocks has been calculated under a different assumption than in the main analysis (see subsection 6.2). In columns (1) to (4), the reported coefficients represent the Tobit estimates of the effect of a marginal change in the corresponding independent variables evaluated at their mean value on the total amount invested in bonds, conditional on a positive value that has been invested in bonds either directly or indirectly. The cluster-robust standard errors are reported in parentheses. ***, ** and * indicate that the coefficient is statistically different from zero at the 1 percent, 5 percent and 10 percent level, respectively.

Independent variables	**(1) Number of siblings**	**(2) Number of parents**	**(3) Nature of parents**	**(4) Model with all variables**
Number of siblings	-3.434**			-3.578**
	(1.565)			(1.572)
Single parent		-10.289		-12.478
		(11.680)		(11.673)
At least one stepparent			-34.094*	-35.255*
			(20.185)	(20.116)
Female	-9.465*	-9.197*	-9.260*	-9.493*
	(5.470)	(5.471)	(5.474)	(5.471)
Age	7.341*	7.158*	6.977	7.581*
	(4.273)	(4.278)	(4.277)	(4.304)
Age^2	-0.046	-0.044	-0.043	-0.047
	(0.030)	(0.030)	(0.030)	(0.030)
High education	37.893***	39.116***	39.304***	37.881***
	(6.987)	(7.008)	(7.020)	(6.981)
Total household	1.853***	1.883***	1.885***	1.851***
income	(0.454)	(0.455)	(0.455)	(0.454)
Household net worth	0.484***	0.483***	0.483***	0.483***
	(0.090)	(0.090)	(0.090)	(0.090)
Couple	-9.051	-8.950	-8.961	-8.973
	(6.316)	(6.315)	(6.320)	(6.319)
Retired	41.186***	41.557***	41.738***	41.492***
	(10.179)	(10.185)	(10.196)	(10.175)
Employed	35.815***	36.465***	36.095***	35.996***
	(11.855)	(11.868)	(11.860)	(11.855)
Austria	-55.904***	-55.661***	-56.289***	-55.598***
	(17.996)	(17.996)	(18.013)	(17.975)
Sweden	4.728	3.546	4.266	3.859
	(11.328)	(11.356)	(11.314)	(11.372)
The Netherlands	-66.678***	-71.425***	-71.123***	-67.985***
	(14.353)	(14.245)	(14.252)	(14.405)
Spain	-145.885***	-147.662***	-148.396***	-147.361***
	(29.020)	(29.120)	(29.136)	(29.061)
Italy	37.376***	35.641***	35.368***	35.552***
	(11.381)	(11.362)	(11.367)	(11.414)
France	-100.362***	-102.246***	-102.766***	-101.686***
	(18.606)	(18.589)	(18.598)	(18.631)
Denmark	19.008*	17.382	17.718	17.587
	(10.981)	(10.984)	(10.951)	(11.009)
Switzerland	20.381	17.618	17.629	18.491
	(13.415)	(13.341)	(13.323)	(13.427)
Belgium	-3.549	-6.076	-6.364	-5.087
	(11.595)	(11.575)	(11.579)	(11.687)

Czech Republic	-105.794***	-104.204***	-104.390***	-107.446***
	(19.493)	(19.497)	(19.491)	(19.516)
Poland	-158.280***	-159.679***	-159.946***	-159.752***
	(25.289)	(25.330)	(25.335)	(25.317)
Log likelihood	-10,865	-10,867	-10,866	-10,863
Pseudo R-squared	0.037	0.037	0.037	0.037
Number of observations	12,144	12,144	12,144	12,144

Note: All monetary amounts are PPP-adjusted and in thousands of euros.