

Does the Early Bird Catch the Worm? Firstborns and Their Financial Decisions

Sven Michael Spira*

HEC Paris

April 12, 2014

Abstract

This paper examines whether birth order can explain variation in financial household decisions. I document that firstborns are more likely to save, to participate in the stock market, and to hold higher conditional equity shares. Consistent with higher financial sophistication, firstborns gather more information when making financial decisions. But when they are optimistic, firstborns seem to act more on their bias in their portfolio choices. Firstborns also tend to engage more in stock picking. Only part of the firstborn effect is captured by standard variables in household finance that also depend on birth order, such as education and income. The results are robust to controlling for parents' age at birth, family fixed effects, and are not found for only children or last borns.

Keywords: Birth order; investor behavior, portfolio choice; household finance.

JEL Classifications: D14, J12.

*HEC Paris, 1 rue de la Liberation, 78351 Jouy-en-Josas, France. Email: michael.spira@hec.edu
I would like to thank Laurent Calvet, Thierry Foucault, Ulrich Hege, Johan Hombert, Adrien Matray, Thorsten Martin, Clemens Otto, Daniel Schmidt, Christophe Spaenjers and Boris Vallée for valuable comments and suggestions. All remaining errors are mine.

1 Introduction

"The family is our haven, the place where we all start off on equal footing - or so we like to think."

*(Dalton Conley, 2004)*¹

Seminal theoretical papers predict homogenous behavior of households with respect to the optimal decision to participate in the stock market, to hold diversified portfolios and to save (Merton, 1969; Samuelson, 1969; Modigliani and Brumberg, 1954). In contrast, the empirical evidence consistently reports widespread investment mistakes such as households' non-participation in the equity market or stock picking behavior (Guiso et al., 2002). Despite continuous advances in the literature, the significant heterogeneity in financial household decisions remains a puzzle (Guiso et al., 2002; Curcuru et al., 2009).

A recent stream of empirical research suggests that personal experiences of economic fluctuations affect choices of both households and companies (Kaustia and Knüpfer, 2008; Choi et al., 2009; Malmendier and Nagel, 2011; Malmendier and Nagel, 2013; Malmendier et al., 2011; Greenwood and Nagel, 2009). Similarly, career experiences in form of service in the military influence CEO decisions (Benmelech and Fryman, 2013; Malmendier et al., 2011). However, the question whether individuals' *family* experiences affect their decisions has received little attention. In particular, do differences in personal experiences that are systematically implied by birth order, matter for households' financial decision-making?

The importance of birth order as an experiential phenomon has been documented for individuals' personality traits, such as being motivated, and for individuals' educational attainments and income (Eckstein et al., 2010). A large number of theories have been put

¹Author of the book "The Pecking Order: A Bold New Look at How Family and Society Determine Who We Become"

forward that attempt to explain how birth order shapes individuals (Adams, 1972). While no consensus on the most appropriate theory has been reached, the common denominator of all current models is that birth order leads to different experiences.² I build on this existing literature and use birth order as a proxy for different family experiences.

The first objective of the paper is to examine the potential relevance of birth order for financial household decisions. I document that in comparison to later borns, firstborns save more, although they plan to retire later and are more likely to hold life insurance. They are also more likely to participate in the stock market, to hold higher conditional equity shares, and to have undertaken profitable investments in the year prior to the interview. I find that firstborns gather more information by consulting financial advisors and by shopping around to learn about the different conditions that banks offer. Moreover, conditional on being optimistic, firstborns seem to act more on this bias. Finally, firstborns tend to be more prone to commit the investment mistake of stock picking.

The second objective of the paper is to explore the finding of the importance of birth order. First, I do not find any differences in portfolio choices between later borns and individuals without siblings (only children). Second, in contrast to firstborns, last borns do not differ in their financial decisions from middle children. Thus, the effects indeed stem from being firstborn in combination with having siblings. Third, although parents are inevitably younger at the time of birth of their first child compared to subsequent siblings, I show that parents' age is not driving the reported firstborn effects. Fourth, the findings do not seem to

²In the past, firstborn effects have also been related to genetic differences. However, medical research shows that unless parents exceed certain age thresholds, no genetic differences are found between firstborns and later borns. Moreover, recent research finds little evidence that genetic differences could explain away birth order effects (Black et al., 2007).

be gender-specific and firstborns are also not more likely to be optimistic. Finally, I identify that my results arise from intra- instead of inter-family variation.

The present paper makes four contributions to the literature. First, while life experiences should not matter according to classic finance models, *ceteris paribus*, I document that birth order can explain part of the heterogeneity in financial household decisions. The firstborn effect for financial decisions seems to be generally consistent with higher financial sophistication. Indeed, firstborns seek more financial information and such information acquisition has been shown to be important for overcoming ignorance and misperceptions (Haliassos and Bertaut, 1995). However, because firstborns are at least as likely as later borns to do the common mistake of stock picking, differences in financial sophistication do not seem to fully explain the findings (Canner et al., 1997).

Second, I find that the importance of birth order for individuals' financial decision-making is *de facto* a firstborn effect. Similar to firstborns with siblings, *only children* have been associated with higher IQs and higher resource allocation of their parents (Mancillas, 2006; Black et al., 2007). However, investors without siblings do not differ in their investment behavior from later borns. Thus, the effect seems to stem from having younger siblings instead of the listed characteristics that are associated with *only children*. Moreover, last born individuals also do not seem to differ in their portfolio choices from other non-firstborns, casting doubt on the relevance of an optimal stopping model, in which parents stop having children when they have a "poor quality" child (Black et al., 2005). While the role of genes for portfolio choices have been documented (Barnea et al., 2010; Cesarini et al., 2009; Cesarini et al., 2010), genetic differences do not seem to cause the firstborn effect. This is

because parents' age, which measures the risk of genetic mutations, does not explain away the predictive power of birth order. Finally, firstborns are not more likely to be optimistic, which casts doubt on differences in behavior due to "effort optimism", i.e., the belief that acquiring skills and knowledge will be worthwhile (Matthew, 2011).

Third, I document that firstborns accept greater financial risks but smaller physical risks. In comparison to later borns, I find *higher* risk tolerance and conditional equity shares for firstborns. In contrast, Argys et al. (2006) report that firstborn children are less likely to use tobacco, alcohol, marijuana or be sexually active, in a paper called "Birth Order and Risky Adolescent Behavior".³ Even though they cannot distinguish between "risky or delinquent behaviors", their results are easily misinterpreted as firstborns being generally more risk averse. Importantly, risk taking is defined in psychology and finance research as e.g., "any consciously, or non-consciously controlled behavior with a perceived uncertainty about its outcome, and/or about its benefits or costs for the physical, economic or psycho-social well-being of oneself or others." (Trimpop, 1994). Thus, there does not seem to be a universal risk aversion but it varies with the nature of the activity.

Fourth, my findings complement the literature on birth order theories. Adams (1972) suggests six categories of birth order theories. My results seem consistent with siblings acting as role models or competitors (*theory of sibling influence*), and firstborn children reacting to the arrival of newborn siblings in order to restore their place (*theory of dethronment*). I do not find that the documented firstborn effects on financial decision-making are driven by genetic differences, variation in parents' resources during early childhood, or changes in the anxiousness of parents or the economic environment (and thus, my findings are more diffi-

³In line with their results, I find smoking to be less common among firstborns in my data.

cult to reconcile with the *intrauterine or physiological theory*, *only-child uniqueness theory*, *anxious or relaxed parents theory*, and *economic theory*, respectively (Adams, 1972)).

This paper investigates data from the Survey of Consumer Finances (SCF), because it allows me to identify the birth order of individuals. First, I always control for demographic characteristics such as gender, race, number of siblings, age, cohort, and year effects. Second, I add potentially correlated socio-economic control variables. Indeed, Black et al. (2005) document that birth order is an important determinant of educational attainment and income – factors that are also known to determine financial decisions. The firstborn indicator continues to be a significant factor, even when controlling for the correlated control variables that capture part of the birth order effect.⁴ Finally, I build an alternative dataset from the Panel Study of Income Dynamics (PSID). This allows me to include family fixed effects, mitigating the concern that the birth order effects arise from inter-family variation.

Taken together, my results show that personal family experiences play an important role for the financial decision-making of individuals. This finding sheds light on an additional dimension of the significance of an individual’s past for her economic choices (cf. *supra*). Indeed, life experiences seem to coin individuals’ behavior. Thus, this research identifies a new source of variation in investor choices. Finally, the paper highlights a novel facet of the importance of birth order for child outcomes.

The organization of this paper is structured as follows. Section 2 reviews the related literature and the data is described in Section 3. Section 4 presents the empirical results for savings and portfolio choices, and then investigates the decision-making process. Section 5

⁴I test and reject that multicollinearity concerns are confounding this analysis, because the variance inflation factor (VIF) is equal to 1.09, suggesting that standard errors are inflated by less than 10% compared to if the control variables were uncorrelated (Woolridge, 2008).

explores potential explanations and provides robustness tests. Section 6 discusses the results and relates the documented findings to existing birth order research. Section 7 concludes.

2 Related literature

2.1 Economic and career experiences affect economic choices

The rational choice theory describes the decision-making process as a set of personal functions so that an agent chooses the best action subject to existing constraints. The model is generally used to show how an agent, given her preferences, can rationally act, without elaborating where her preferences stem from (e.g., Becker, 1976).

A recent empirical literature highlights that an individual's experiences affect beliefs and preferences. Alesina and Fuchs-Schündeln (2005) find preferences for redistribution and state interventions among households that formerly lived under a Communist regime. The role of reinforcement learning, i.e., the importance of personal experiences, is highlighted by Kaustia and Knüpfer (2008) and Choi et al. (2009). Focusing on the Great Depression, Graham and Narasimhan (2004) and Schoar and Zu (2011) show a decrease in the faith in external capital markets. Malmendier and Nagel (2011) observe that the experienced states of the stock market affect individuals' willingness to take financial risks. Low experienced stock market returns make participation in the equity market less likely and, conditional on participation, decreases the equity share of financial wealth. Moreover, Guiso et al. (2013) document that risk aversion increases after experiencing crises.

Additionally, individual-specific experiences also have been shown to affect individu-

als' decisions. In particular military service and combat exposure are shown to affect life choices (Elder, 1986; Elder and Clipp, 1989). Analyzing corporate policies, Malmendier et al. (2011) find that firms whose CEOs served in the military have increased leverage. In turn, Benmelech and Frydman (2013) document that military CEOs are associated with lower investment levels and more ethical behavior of firms.

2.2 The importance of birth order

In the psychology, education and labor economics literature, birth order is a well-documented experiential phenomenon.⁵ Numerous theories exist why birth order may affect child outcome.⁶ Adams (1972) proposes six categories of birth order theories, to which I relate respective hypotheses with regard to firstborn effects:

(1) *Intrauterine or physiological theory* suggests that the mother's age and number of births leads to genetic differences in children. Therefore, controlling for the risk of genetic mutations should explain away birth order effects.

(2) *Only-child uniqueness theory* builds on the undivided time and interest of parents at youth (Guilford and Worcester, 1930; Behrman and Taubman, 1986). Similar to Zajonc (1976), Behrman and Taubman (1986) write that "the oldest child has some periods, particularly during presumably critical early years, when he or she has less competition for mother's time". Hence, firstborn siblings may exhibit a similar behavior as only children.

(3) *Dethronement theory* describes that firstborns react to the arrival of a sibling to restore

⁵Several bibliographies on birth order research have been composed. For instance, Stewart and Stewart (1995) identify 1,065 relevant birth order publications between 1976 and 1993.

⁶An exhaustive summary of birth order theories is beyond the scope of this paper. See Eckstein et al. (2010) for a survey of the literature.

his or her place of preeminence (Adler, 1928). In this case, the effects should be exclusive to individuals with siblings.

(4) *Anxious or relaxed parent theory*, suggesting that parents are more protective of their firstborn child (Roberts, 1938). Such protectionism may lead to less risk taking by firstborn children (cf. *supra*).

(5) *Sibling influence theory* proposes that siblings act as role models or competitors. The importance of social interactions and role models, such as older siblings, as a determinant of aspirations and norms of individuals have been highlighted by Rodgers et al. (1992) and Haveman and Wolfe (1995). Similar to the theory of dethronment, birth order effects should be exclusive to children with siblings.

(6) *Economic theory* conjectures that the parents' economic resources vary with birth order. On the one hand, the firstborn may benefit from scarce educational funds that he or she can spend. On the other hand, later born children may experience greater spending since family income rises (Birdsall, 1991). Thus, birth order effects should vary with socioeconomic levels. Because household income and net wealth tend to be a function of age, controlling for the parents' age at the time of birth should explain away birth order effects.⁷

It should be noted that many birth order theories are not mutually exclusive. Moreover, no consensus exists on the most appropriate category of birth order theories, let alone on the most adequate specific birth order model. However, in line with the medical literature, Black et al. (2007) find that effects stemming from birth order do not seem to be biologically determined (cf. *infra*). Therefore, the birth order theory of physiological differences finds

⁷A cleaner test would be to directly control for parents' household income and net wealth at the time of birth. However, household finance surveys do not track individuals long enough to allow such an analysis (yet).

less recent support. Importantly, the common denominator of the remaining theories is that they build on socialization, and therefore implied differences in experiences for firstborns compared to later borns.

Surveying 200 birth order articles from the psychology and sociology literature, Eckstein et al. (2010) document that firstborns are typically associated with being "high achievers", "motivated", and "ambitious". In economics, Black et al. (2005) find that higher birth order has a strong negative effect on educational attainment and income, and they acknowledge that their results are consistent with numerous birth order theories.

3 Data and Variables

3.1 Data collection

This study draws on data from the Survey of Consumer Finances (SCF), a pooled cross-sectional dataset on U.S. households. I use data from the SCF waves 1995 until 2010, due to changes in the questionnaire prior to 1995. Similar to other household surveys, the SCF reports multiple imputations of data in order to address missing or range answers, as well as disclosure limitations (Kennickell, 1998). Because each household appears five times in the sample, standard errors have to be adjusted following techniques suggested by Little and Rubin (1987) and Montalto and Sung (1996). I aggregate financial data per household, and keep individual-specific information, such as race and age, at the level of the household head. A comprehensive list of the variables used in this study are detailed and defined in Table 1.

[Insert Table 1 about here]

The SCF does not provide complete information on the family structure, and in particular does not allow to identify descendents from the same family. Thus, I construct a second dataset from the Panel Study of Income Dynamics (PSID). In order to accurately identify the number of siblings and their birth order, I limit the observations to respondents whose parents were interviewed in the first wave in the year 1968, and the whole family structure can be extracted in the latest wave. Since the number of variables is limited in this second dataset, I will use it for robustness tests. First and foremost, this data allows me to generate family fixed effects in order to test whether the firstborn effect is indeed an intra-family effect.

3.2 Descriptive statistics

Table 2 outlines the descriptive statistics of the control variables and dependent variables used throughout this study. The average respondent is 50.5 years old, 59% of survey participants are married and 86% have children. Moreover, 78% of all household heads in the survey are male, 46% have a college degree, 17% are retired, and 24% are self-employed.

[Insert Table 2 about here]

4 Results

To study the financial decision-making behavior of firstborns, I estimate a multivariate regression model. The regression equation can be expressed as follows:

$$y_i = \beta_0 + \beta_1 \text{firstborn}_i + \theta' X_i + \text{siblings}_i + A_i + Y_i + C_i + \epsilon_i \quad (1)$$

where β_1 is the coefficient of interest. Blake (1989) describes in detail the rigorous data requirements to study birth order effects. The control variables include the usual age effects (A), a vector of survey year indicators (Y) and cohort groups (C). In particular, firstborns are older and likely to be from a different cohort than their siblings. Thus, I group cohorts for individuals born in the same half of a decade. Moreover, building on the result of Malmendier and Nagel (2011), I replace the cohort dummies by a variable that equals the return of the S&P500 during the respondents youth (age 15 to 25). Since the findings are robust to this alternative specification, this mitigates the concern that my results are driven by multicollinearity issues or misidentification of cohort effects.

The number of siblings is a key control variable in order to not confound birth order with family size effects (*siblings*). For instance, wealthier and better educated families tend to have, *ceteris paribus*, fewer children. Thus, when interviewing a respondent from a small family, the likelihood of interviewing a firstborn is higher since the person is chosen from a smaller group. Hence, without controlling for the family size, firstborns may proxy for the social background of the family, and I would confound the effects of birth order with family size (and related economic differences between families). Thus, I control for the number of siblings in all regression models. Because the majority of the birth order theories relate the effects to the existence of siblings, I restrict the sample to respondents with siblings. However, in an extension, I will include individuals without siblings in the analysis.

Finally, for the main results I estimate the regression models with and without a vector of additional control variables (X). While I always control for gender and race, socio-economic control variables such as education and income have been shown to depend on birth order (Black et al., 2005). Without controlling for these correlated variables, the specification measures the total explanatory power of birth order for an economic decision. When including all control variables, *firstborn* only captures the effect of birth order that does not affect the economic decision indirectly through other observable characteristics.⁸ In order to test for potential multicollinearity concerns in this second specification, I compute the variance inflation factor (VIF) (Woolridge, 2004). The VIF equals 1.09, suggesting that the standard error of the firstborn coefficient is inflated by less than 10% compared to if the additional control variables were uncorrelated.

4.1 The decision to save, work and take insurance

The saving decision is one of the key financial decisions a household makes.⁹ Therefore, I examine the savings behavior of firstborns in comparison to later borns. The dependent variable is a saving indicator equal to one if the household spent less than their income over the twelve months prior to the interview. As an alternative specification, I examine the dollar amount saved in retirement accounts, conditional on the existence of such accounts. The results in Table 3 show a statistically highly significant relation between being firstborn and both measures of savings behavior. For instance, a computation of the predicted marginal effect indicates that firstborns are 2.71 percentage points more likely to be saving than

⁸The problem of "bad controls" would only arise if the financial decision conditional on the socio-economic characteristic does not have a causal interpretation.

⁹For an extensive review of the literature see Browning and Lusardi (1996).

later borns, corresponding to a 5.3% relative increase in the saving probability (column 1). When introducing all control variables, this effect decreases by 40% but remains statistically significant (column 2). Moreover, the order of magnitude is comparable to the importance of a college degree.

[Insert Table 3 about here]

A potential explanation for differences in savings behavior is that some individuals plan to retire sooner. Columns 4 and 5 of Table 3 examine the planned retirement age and larger pension savings indeed lead to a younger planned retirement age. However, firstborns plan to work between 3 and 4 months longer than later borns. In comparison, self-employment status leads to a planned retirement age that is 10.7 months higher, indicating that the first-born effect is not negligible. Moreover, the finding of later retirement among self-employed individuals is consistent with the labor economics literature (e.g., Bartel and Sicherman, 1993).

Finally, Lusardi (1998) documents the importance of the precautionary saving motive for retirement. Therefore, some individuals may regard saving and insurance as substitutes. Since I find that firstborns are more likely to be savers, I examine their holding of insurance. The dependent variable in column 6 and 7 (Table 3) is a dummy equal to one if a household holds a life insurance contract. The results report that firstborns are statistically more likely to own insurance. The size of the effect corresponds to more than 30% of the importance of the marital status, a natural determinant of insurance taking.

4.2 Portfolio choices

Now, I turn to investigating how birth order affects portfolio choices. For each respondent, I examine the self-assessed risk tolerance, stock market participation, and for respondents who participate in the equity market, the fraction of financial assets invested in equities, and self-reported past investment success.

In Panel A of Table 4, I first examine whether individuals are willing to take "average or higher" financial risks, when they can expect "average or higher" returns. The dependent variable is zero otherwise. Columns 1 and 2 show that firstborns report to be significantly more risk tolerant. The effect again decreases by 30% when all control variables are included but stays significant at the 10% level.

[Insert Table 4 about here]

Next, I study the decision to participate in the stock market. In columns 3 to 6 of Panel A, I examine the probability to hold bonds and the decision to hold equities. In all specifications, firstborns are more likely to participate in either market. Indeed, the likelihood of participating in the bond and equity market increase by 6.7% and 6.2%, respectively. The introduction of all potentially correlated control variables reduce the effects by approximately a third. Moreover, the control variables generally carry the expected signs, so that educated and wealthier individuals are more likely to participate in the stock market.

In Panel B of Table 4 I study the explanatory power of being firstborn for the equity shares in household portfolios, conditional on holdings equities. In the first two columns, I observe that being firstborn increases the financial wealth allocated to equities between

1.3 and 1.7 percentage points. Thus, birth order can explain up to 6% of one standard deviation in the risky share allocation. In magnitude, this also corresponds to more than 37% of the gender effect, an economically important determinant of risk taking (Barber and Odean, 2001). Moreover, columns 3 and 4 report that firstborns are more likely to have self-reported their past investments as successful. The effect corresponds to approximately 40% of the importance of having a college degree.

4.3 The decision-making process

This section examines how firstborns may differ in the decision-making process from later borns. I investigate first the information seeking behavior of firstborns, and second, the relative importance of beliefs.

4.3.1 Seeking of information when making financial decisions

Haliassos and Bertaut (1995) highlight the importance of the information acquisition for overcoming ignorance and misperceptions, which otherwise may lead to not investing in the stock market. However, Bhattacharya et al. (2012) find little demand for unbiased and free information in form of financial advice. They conclude that the problem of improving investors' investment decisions stems from a lack of demand for advice. For firstborns, the higher educational attainment has, among other factors, been attributed to the observance that firstborns are more information seeking during schooling (Bradley, 1968). Therefore, I examine the information seeking behavior of firstborns versus later borns when making financial decisions.

The SCF asks four questions that can be used to examine the information gathering

behavior of household heads. First, the dependent variable is an indicator if individuals consult a financial advisor when making borrowing or investment decisions. Second, I replace the indicator with a variable that measures whether respondents contact multiple banks in order to compare conditions when borrowing or investing.

Columns 1 and 2 of Panel A in Table 5 examine the decision to consult a financial advisor when borrowing. On average, only 16.5% of the sample ask for such advice. Thus, the predicted margin of a 1.1 percentage point increase in the probability to consult an advisor when being a firstborn, corresponds to a 6.5% relative increase (column 1). The effect remains significant and equally important when adding the correlated control variables in column 2. When investing, 40.3% of the households in the sample consult with a financial advisor, so that being born first, leads to a 8.4% relative increase in the probability to consult an advisor (column 3). However, although it stays significant, the effect drops to 3.3% when adding the correlated control variables (column 4).

[Insert Table 5 about here]

In Panel B of Table 5, the first two columns study the individual's behavior of shopping around at different banks in order to compare conditions when borrowing. Keeping other characteristics constant, I find that firstborns are significantly more likely to engage in shopping around. Column 3 and column 4 confirm that the behavior of firstborns is consistent when making investment decisions.

4.3.2 Attention and the importance of optimism

Individuals have limited attention so that they need to allocate their resources (Kahneman, 1973). Because the previous analysis shows that firstborns gather more financial information, I conjecture that firstborns are more attentive. This is consistent with Corwin and Coughenour (2008) who describe attention limits as not being able to continuously incorporate information. The supposition is further supported by two findings. First, for a small sample, the SCF captures two frequent measures of investor attention: the number and the frequency of trades per year (Corwin and Coughenour, 2008). Being firstborn correlates positively with both attention proxies (untabulated). Second, Eckstein et al. (2010) report that the psychology literature describes firstborns as being more motivated and ambitious – characteristics that may be associated with increased attention (Bradley, 1968).

As part of the decision-making process, the importance of behavioral biases such as optimism or overconfidence have been well documented in the literature (e.g., Barber and Odean, 2000, 2001; Puri and Robinson, 2007). Peress and Schmidt (2014) present evidence that the effects of behavioral biases are mitigated if an investor is inattentive. In order to test for differences in the decision-making process, I examine the relative importance of beliefs, specifically optimism. Because firstborns seem more attentive, firstborns may be more likely to act on their beliefs. This hypothesis predicts that when investors are optimistic, the effect is more pronounced for firstborns than for later borns.

The SCF allows me to use three main proxies for optimism and investor sentiment. First, I define optimism similar to Puri and Robinson (2007) as the miscalibration in life expectancy, second, as optimistic forecasts for the U.S. economy, and third, as an indicator variable if

the stock market performance of the S&P 500 in the year prior to the interview was positive. The main variable of interest in this analysis is now the interaction term between firstborns and optimism. I predict a positive coefficient as firstborns are more motivated, which leads to more attention, and results in a more pronounced optimism effect.

Table 6 presents the results when distinguishing the optimism effect on portfolio choice by birth order. We can see that all interaction terms of firstborns and the optimism measures are positive, although only 4 out of 6 are statistically significant. Columns 1 to 3 examine the decision to participate in the equity market. For two out of the three optimism specifications I find that the effect of optimism for the participation decision is more pronounced for firstborns. Indeed, for the decision to participate in the equity market, only the effect of optimism about the U.S. economy is not different between firstborns and later borns (column 2).

[Insert Table 6 about here]

Columns 4 to 6 show the results when examining the risky share allocation, conditional on participating in the equity market. Again, the effect of optimism tends to be more important for firstborns than for later borns. Only the interaction of firstborn and the optimism proxy according to Puri and Robinson (2007) fails to show up significantly.¹⁰ Taken together, this analysis suggests that if optimists are firstborn, they act more on their bias than later borns. This highlights an additional discrepancy in the decision-making process of firstborns and later borns. Moreover, the observed differences are in line with the hypothesis that firstborns

¹⁰This may be expected because in their paper they do not obtain a significant effect of optimism on the equity share allocation.

are more motivated and therefore, are more attentive.¹¹

5 Extensions and exploratory tests

In the following section, I explore the main results, in particular with regard to possible explanations for the reported findings. Moreover, I conduct and report robustness tests for the importance of birth order for individuals' financial decision-making.

5.1 Firstborns versus only children

While initially rejected by Rodgers et al. (2000), recent findings suggest that firstborns may have higher IQs (Black et al., 2007). Mancillas (2006) report comparable effects for *only children*. Thus, if intelligence is the main reason for my findings, I should find similar effects for only children as for firstborns with siblings. Similarly, if early, undiluted parental resources are a main driver of the firstborn effect, only children should display similar behavior (Blake, 1989). Finally, comparing the behavior of firstborns with and without siblings investigates whether firstborns invest differently as they may expect a larger bequest compared to later borns.¹²

In Table 7, I repeat the analyses of the portfolio choices of households. It can directly be seen that the *only child* indicator is insignificant in all specifications. Moreover, in 6 out of 10 regression specifications, the coefficients of *only child* bear the opposite signs of the firstborn effect. Finally, firstborn remains a significant, and almost unchanged, factor in all

¹¹Different forms or levels of assuming responsibility may also be consistent with the observed effects.

¹²However, differences in (expected) bequests are unlikely to drive the results since it stands in contrast with the findings on the savings behavior and only finds little support in the empirical literature.

specifications. Thus, the firstborn effect seems to depend on having younger siblings.

[Insert Table 7 about here]

5.2 Firstborns versus last born children

Among the many theories of birth order effects, an optimal stopping model has been proposed. The model states that parents continue to have children until they have a child of "poor quality". Black et al. (2005) report evidence that includes a potential "last child" effect, even though it is not the factor driving their birth order results. By introducing an indicator variable for last born children, I test whether the firstborn effects that I have documented are, instead, last born effects. Thus, the implied hypothesis predicts that the coefficient of last born enters the regression models with the opposite sign of the firstborn effect, and decreases the explanatory power of the firstborn indicator.

Table 8 shows the results when adding an indicator for individuals that are born last. First, the effect from being born last is never significant. Moreover, only once does *last born* enter the model with the opposite sign of the firstborn effect (for the decision to participate in the equity market). Second, the firstborn effect only becomes insignificant in the last specification when examining past investment success. Indeed, the coefficient is unchanged and the standard error increases (p-value 0.102). Thus, I do not find evidence consistent with an optimal stopping model and it does not seem to drive the documented firstborn effects.

[Insert Table 8 about here]

5.3 Firstborns and parents' age

Two explanations are frequently provided in the literature why the birth order effect may be (partly) driven by parental age. First, parents are inevitably younger when their first child is born, compared to subsequent children. While later borns are not genetically different from firstborns, this only holds as long as parental age does not exceed certain thresholds (Brown et al., 2002; Hassold and Hunt, 2009; Kong et al., 2012). The medical literature documents that the risk of genetic mutations, measured as the child's risk of being affected by syndromes and diseases, increases when women are older than 35, or the man is older than 45 at the time of the child's birth. Since genetic variation is shown to affect portfolio choices, it is important to control for the risk of genetic mutations (Barnea et al., 2010; Cesarini et al., 2009; Cesarini et al., 2010). Second, households typically evolve as they age. For instance, wealth gets accumulated so that later born children may grow up in a wealthier family if parents are older at their time of birth. Similarly, parents may have had different experiences, energy or priorities when they are older, which could lead to differences in child outcomes.

I examine both potential explanations for the documented firstborn effect. For all reported values, first, I create indicator variables whether the mother's or father's age exceeds the critical thresholds for the risk of mutations. Second, I simply include parents' age as direct control variables. Comparable results are obtained for polynomial parental age functions, or the inclusion of indicator variables if no data is available for deceased parents (not tabulated). Table 9 reports the results when controlling for both forms of parents' age. First, in 9 out of 10 specifications, the firstborn effect survives controlling for

parents' age. Indeed, only the effect of firstborns on risk tolerance becomes insignificant when adding the linear age variables, but it continues to carry a positive sign and is close to significant (p-value 0.138). Second, only 4 of the 20 parents' age variables enter the models significantly. Therefore, the firstborn effect cannot be mainly attributed to parents' age and deduced explanations.

[Insert Table 9 about here]

5.4 Firstborns, gender and optimism

The psychology literature provides mixed evidence on whether firstborn effects are gender-specific. In the following analysis, I interact the gender of the individual with birth order in order to examine whether the documented firstborn effects depend on the gender of the household head. However, it should be noted that this analysis may suffer from a small sample bias since only 22% of respondents are female. Moreover, similar to other surveys, the SCF and PSID automatically define the household head as male in mixed-sex couples. Thus, this analysis is likely to suffer from biased estimates (Kleijnans, 2013).¹³

Table 10 reports the results of a set of regressions when differentiating the firstborn effect by gender. Only for the decision to participate in the equity market is the effect statistically significantly different for firstborn females than for males, indicating a reduced likelihood in participation (column 3). However, when examining the risky share allocation, the interaction term *Firstborn X Female* bears a positive, although insignificant coefficient,

¹³Conditioning on singles reduces the sample size significantly and introduces a sample selection bias. However, the results are qualitatively similar (untabulated).

suggesting that the positive firstborn effect may be more pronounced for females (p-value 0.262). Overall, I do not seem to find convincing evidence that the firstborn effect on portfolio choice is gender-specific.

[Insert Table 10 about here]

In additional tests, I examine whether the firstborn effect depends on the marital status. In addition to estimation issues that may arise when pooling couples with single households (Rosen and Wu, 2004), a partner may mitigate the importance of the household head's personal characteristics. However, I do not find any evidence for differences in the importance of birth order by marital status (untabulated). A potential explanation for this could be a non-random selection in the type of partner an individual marries. Being a firstborn increases the likelihood of marrying a partner who is also firstborn by more than 6%, a statistically significant effect at the 1% level, controlling for the number of siblings of both partners.

When studying portfolio choice, some of the firstborn effects seem consistent with the hypothesis that firstborns are simply optimists. Moreover, Matthew (2011) shows that "effort optimism", i.e., the belief that acquiring skills and knowledge will be worthwhile, can partly explain differences in educational outcomes, although his analysis focuses on the differences between black and white students. Therefore, the question arises whether firstborns may be generally more optimistic than later borns. The SCF enables me to study economic and income optimism, as well as stock picking behavior, which has been documented to be more frequent among optimists (Puri and Robinson, 2007).

Table 11 shows that firstborns are not more optimistic than later born respondents. In column 1, when studying economic optimism, *firstborn* carries a negative but insignificant

coefficient. In turn, in the second column, an insignificant, positive coefficient is associated with being firstborn. Finally, as measures for stock picking behavior, I divide direct stockholdings by total equity holdings, and also consider the number of stocks held. I find no effect on the fraction of directly held stock holdings (column 3). However, column 4 shows that firstborns tend to hold statistically significantly fewer individual stocks. Therefore, I conclude that firstborns are at least not less likely to do the investment mistake of stock picking, and that this behavior is not driven by differences in optimism.

[Insert Table 11 about here]

In order to test for consistency of my SCF data and the identification strategy with other studies, I also examine the effect of firstborns on educational attainment and smoking behavior. In column 5 of Table 11, I find similar to Black et al. (2005) that firstborns are more likely to obtain a college degree. In addition, I also observe a negative effect of being firstborn on the probability to smoke (Argys et al., 2006).

5.5 Inter- and intra-family variation

A potential concern with my findings is that firstborn may be picking up inter-family instead of intra-family differences. Adding family fixed effects to the models would mitigate this concern. Because the SCF does not provide more detailed family information, I use the PSID in order to repeat the main tests of this paper. Of course, the number of siblings does not vary within families, so that I drop the collinear controls of the number of siblings from the regression model. Due to the different focus of the PSID, I can only reconstruct some of the dependent variables in this study. Moreover, the analysis is restricted to a small sample,

since I have to limit the observations to respondents whose parents were interviewed in the first wave in the year 1968, and the whole family structure can be extracted in the latest wave. Therefore, I also exclude the survey year fixed effects from the initial regression equation.

Using the PSID, Table 12 reports the results when I re-examine the main findings and add family fixed effects to the regression models. Column 1 shows the savings behavior of firstborns in comparison to later borns, and in the second column I control for inter-family differences. In both specifications firstborns have statistically significantly higher pension savings, and the effect is almost 67% larger when including family fixed effects, although the difference in the the firstborn coefficients is statistically not significant. Thus, the firstborn effect seems to stem from *intra*-family variation.

[Insert Table 12 about here]

Similarly, in columns 3 and 4 I examine net income. Again, firstborns have higher net income in both regression models, and the effect seems more pronounced when including family fixed effects. Moreover, firstborns are more likely to hold insurance (columns 5 and 6), and the two models yield similar coefficients for being firstborn. Finally, equity market participation is more common among firstborns as shown in columns 7 and 8. When including family fixed effects, the firstborn indicator increases again but the difference in the firstborn coefficients remains statistically insignificant.

This analysis shows that when adding family fixed effects to the regression models, the statistical significance of firstborn effects tends to increase across financial decisions. However, the order of magnitude of the effects remains constant across specifications. Overall,

this analysis mitigates the concern that the findings documented in this paper are driven by or overestimated due to inter-family differences.

6 Discussion

6.1 Firstborns and risk tolerance

Argys et al. (2006) find that later children are more likely to use tobacco, alcohol, marijuana or be sexually active. They conclude that firstborns are less likely to engage in "risky adolescent behavior". However, the studied activities can be similarly described as "improper behavior" (Averett et al., 2011). Indeed, Argys et al. (2006) stay quiet on whether their firstborn effect relates to "risky or delinquent behaviors". Thus, their result may lead to the interpretation that firstborns are generally more risk averse. Since the concept of "risk aversion" in finance is clearly defined to relate to financial risk taking instead of delinquent activities, I can specifically examine whether firstborns are more risk averse when making financial decisions.

The two main tests in this paper examining financial risk aversion consist of the respondent's self-assessment of her risk tolerance and the risky share allocation, conditional on holding equities. In both models, the documented effect indicates *higher* risk tolerance among firstborns. Thus, my results imply that firstborns are not more but less risk averse when making portfolio choices. However, similar to Argys et al. (2006) I find that firstborns are less likely to smoke.

Importantly, the definition of risk taking does not differ in psychology and finance re-

search, and can generally be described as "any consciously, or non-consciously controlled behavior with a perceived uncertainty about its outcome, and/or about its benefits or costs for the physical, economic, or psychological well-being of oneself or others." (Trimpop, 1994). Therefore, it seems to be important to distinguish between financial and physical risk aversion. In particular, the existing psychology literature has exclusively documented lower physical risk taking of firstborns, and in contrast, my findings highlight that firstborns accept greater financial risks.

6.2 Birth order research

The main goal of this research is not to explain the nature of the birth order effect, but to build on the fact that different birth order implies different family experiences, which forms individuals' personalities. In this section I relate my findings to the most common birth order results in the psychology literature.

Taken together, my findings seem to generally support the consensus of the psychology literature (Eckstein et al., 2010). Saving can be associated with prudent behavior and conformance with social norms. The increased likelihood of holding equities can be seen as forgoing the mistake of non-participation in the equity market. However, it should be noted that firstborns are not less likely to make the mistake of stock picking. The seeking for information when making decisions is in line with the behavior of firstborn students. Finally, firstborn investors may be more risk tolerant due to their ambition, because Borghans et al. (2009) document that more ambitious individuals are less risk averse.

In the context of the six categories of birth order theories (Adams, 1972), my findings

do not seem to support the intrauterine theory or economic theory because parents' age does not explain away firstborn effects. As only children do not resemble firstborns in their financial decision-making, my findings also do not seem to be consistent with the only-child uniqueness theory. The anxious and relaxed parents theory predicts the opposite risk taking behavior than the one I document. Because I find the firstborn effects only for the sample with siblings, my findings are in line with the dethronement theory and/or sibling theory.¹⁴

7 Conclusion

Motivated by a recent literature that documents the relevance of economic and career experiences for the decision-making of households and corporate policies, this paper examines the importance of personal family experiences for household choices. Building on a stream of literature that documents birth order to be an important experiential phenomenon, I conduct the first investigation of its importance for financial decision-making.

Firstborns are more likely to save and have higher pension savings, conditional on owning retirement accounts. In addition, they want to retire later and are more likely to own a life insurance. Firstborns are more risk tolerant, more likely to participate in the bond and equity market, and hold a higher conditional equity share. Being firstborn also increases the likelihood to seek information when making financial decisions, and because firstborns may be more attentive, I find the effects of investor optimism to be more important for firstborns than for later borns. Importantly, this highlights an additional difference in the

¹⁴For instance, firstborns could feel "dethroned", fueling their subsequent behavior; firstborns may assume responsibility for their siblings, shaping their different personalities; or parents may attempt to raise their firstborn child as a role model for later children.

decision-making process of individuals by birth order. Finally, stock picking may be more common among firstborns.

All effects are robust to controlling for socio-economic characteristics, which partly depend on birth order. Family fixed effects mitigate concerns that the effects are driven by inter-family differences. Only children do not exhibit similar portfolio choices to firstborns with siblings, and I do not find evidence for an optimal stopping model with last born children. Parents' age also does not explain away the importance of birth order.

In future work, it would be important to understand better what differences in childhood experiences are caused by birth order. This exercise will allow to refine the experiential determinants of individuals' financial decisions.

References

- Adler, Alfred. 1928. "Characteristics of the first, second and third child." *Children* 3, 14-52.
- Adams, Bert N. 1972. "Birth Order: A Critical Review." *Sociometry* 35, 411-439.
- Alesina, Alberto, and Nicola Fuchs-Schündeln. 2007. "Good-bye Lenin (or not?): The effect of Communism on people's preferences." *American Economic Review* 97, 1507-1528.
- Argys, Laura, M., Daniel I. Rees, Susan L. Averett, and Benjama Witoonchart. 2006. "Birth Order and Risky Adolescent Behavior." *Economic Inquiry* 44, 215-233.
- Averett, Susan L. , Laura M. Argys , and Daniel I. Rees. 2011. "Older siblings and adolescent risky behavior:does parenting play a role?." *Journal of Population Economics* 24, 957-978.
- Barber, Brad, and Terrance Odean. 2000. "Trading is Hazardous to Your Wealth. The Common Stock Investment Performance of Individual Investors" *Journal of Finance* 55, 773-806.
- Barber, Brad, and Terrance Odean. 2001. "Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment." *Quarterly Journal of Economics* 116, 261-292.
- Barnea Amir, Henrik Cronqvist, and Stephan Siegel. 2010. "Nature or nurture: What determines investor behavior?" *Journal of Financial Economics* 98, 583-604.
- Bartel, Ann P., and Nachum Sicherman. 1993. "Technological Change and Retirement Decisions of Older Workers." *Journal of Labor Economics* 11, 162-183.
- Becker, Gary S. 1976. "The Economic Approach to Human Behavior." University of Chicago Press.
- Behrman, Jere R., and Paul Taubman. 1986. "Birth Order, Schooling, and Earnings." *Journal of Labor Economics* 4, 121-145.
- Benmelech, Efraim, and Carola Frydman. 2013. "Military CEOs." *Journal of Financial Economics*, forthcoming.
- Birdsall, Nancy. 1991. "Birth Order Effects and Time Allocation." *Research in Population Economics* 7, 191-213.
- Bhattacharya, Utpal, Andreas Hackethal, Simon Kaesler, Benjamin Loos, and Steffen Meyer. 2012. "Is Unbiased Financial Advice To Retail Investors Sufficient? Answers from a

Large Field Study." *Review of Financial Studies* 24, 975-1032.

Black, Sandra, Paul J. Devereux, and Kjell G. Salvanes. 2005. "The More the Merrier? The Effect of Family Size and Birth Order on Children's Education." *Quarterly Journal of Economics* 120, 669-700.

Black, Sandra, Paul J. Devereux, and Kjell G. Salvanes. 2007. "Older and Wiser? Birth Order and IQ of Young Men." NBER Working Paper Series.

Blake, Judith. 1989. "Family Size and Achievement." Berkeley and Los Angeles, CA: University of California Press.

Borghans, Lex, Bart H.H. Golsteyn, James J. Heckman, and Huub Meijers. 2009. "Gender Differences in Risk Aversion and Ambiguity Aversion." *Journal of the European Economic Association* 7, 649-658.

Bradley, Richard. 1968. "Birth Order and School-related Behavior: A Heuristic Review." *Psychological Bulletin* 70, 45-51.

Brown, Alan, Catherine A. Schaefer, Richard J. Wyatt, Melissa D. Begg, Raymond Goetz, Michaeline A. Bresnahan, Jill Harkavy-Friedman, Jack M. Gorman, Dolores Malaspina, and Ezra S. Susser. 2002. "Paternal Age and Risk of Schizophrenia in Adult Offspring." *American Journal of Psychiatry* 159, 1528-1533.

Browning, Martin, and Annamaria Lusardi. 1996. "Household Saving: Micro Theories and Micro Facts." *Journal of Economic Literature* 34, 1797-1855.

Canner, Niko, Gregory Mankiw, and David Weil. 1997. "An Asset Allocation Puzzle." *American Economic Review* 81, 181-191.

Cesarini, David, Christopher T. Dawes, Magnus Johannesson, Paul Lichtenstein, and Bjoern Wallace. 2009. "Genetic Variation in Preferences for Giving and Risk Taking." *Quarterly Journal of Economics* 124, 809-842.

Cesarini, David, Magnus Johannesson, Paul Lichtenstein, rjan Sandewall, and Bjoern Wallace. 2010. "Genetic Variation in Financial Decision-Making." *Journal of Finance* 65, 1725-1754.

Choi, James J., David Laibson, Brigitte C. Madrian, and Andrew Metrick. 2009. "Reinforcement Learning and Savings Behavior." *Journal of Finance* 64, 2515-2534.

Corwin, Shane, and Jay F. Coughenour. 2008. "Limited Attention and the Allocation of

Effort in Securities Trading." *The Journal of Finance* 63, 3031-3067,

Curcuro, Stephanie, John Heaton, Deborah Lucas, and Damien Moore. 2009. "Heterogeneity and portfolio choice: Theory and evidence." in Yacine Ait-Sahalia, and Lars Peter Hansen, eds.: *Handbook of Financial Econometrics* (Elsevier, Amsterdam).

Eckstein, Daniel, Kristen J. Aycock, Mark A. Sperber, John McDonald, Victor Van Wiesner, Richard E. Watts, and Phil Ginsburg. 2010. "A Review of 200 Birth-Order Studies: Lifestyle Characteristics." *Journal of Individual Psychology* 66, 408-434.

Elder, Glen. 1986. "Military times and turning points in mens lives." *Development Psychology* 22, 233-245.

Elder, Glen, Clipp, E., 1989. "Combat experience and emotional health: impairment and resilience in later life." *Journal of Personality* 57, 311-341.

Guiso, Luigi, Michael Haliassos, and Tullio Jappelli. 2002. "Household Portfolios." MIT Press.

Guiso, Luigi, Paolo Sapienza, and Luigi Zingales. 2013. "Time Varying Risk Aversion." Booth Working Paper No. 13-64.

Graham, John R. and Krishna Narasimhan. 2004. "Corporate Survival and Managerial Experiences during the Great Depression." Working Paper.

Greenwood, Robin, and Stefan Nagel. 2009. "Inexperienced investors and bubbles." *Journal of Financial Economics* 93, 239-258.

Haliassos, Michael, and Carol C. Bertaut. 1995. "Why Do So Few Hold Stocks?" *The Economic Journal* 105, 1110-1129.

Hassold, Terry, and Patricia Hunt. 2009. "Maternal age and chromosomally abnormal pregnancies: what we know and what we wish we knew." *Current Opinion in Pediatrics* 21, 703-708.

Haveman, Robert, and Barbara Wolfe. 1995. "The Determinants of Childrens Attainments: A Review of Methods and Findings." *Journal of Economic Literature* 33, 1829-78.

Kahneman, Daniel. 1973. "Attention and Effort." New Jersey: Prentice Hall.

Kaustia, Markku, and Samuli Knüpfer. 2008. "Do Investors Overweight Personal Experience? Evidence from IPO Subscriptions." *Journal of Finance* 63, 2679-2702.

Kennickell, Arthur B. 1998. "Multiple Imputation in the Survey of Consumer Finances." Working Paper.

Kleinjans, Kristin J. 2013. "The man of the house - How the use of household head characteristics may lead to omitted variable bias." *Economics Letters* 119, 133-135.

Kong, Augustine, Michael L. Frigge, Gisli Masson, Soren Besenbacher, Patrick Sulem, Gisli Magnusson, Sigurjon A. Gudjonsson, Asgeir Sigurdsson, Aslaug Jonasdottir, Adalbjorg Jonasdottir, Wendy Wong, Gunnar Sigurdsson, G. Bragi Walters, Stacy Steinberg, Hannes Helgason, Gudmar Thorleifsson, Daniel F. Gudbjartsson, Agnar Helgason, Olafur Th. Magnusson, Unnur Thorsteinsdottir, and Kari Stefansson. 2012. "Rate of de novo mutations, fathers age, and disease risk." *Nature* 488, 471-475.

Little, Roderick J.A., and Donald B. Rubin. 1987. "Statistical Analysis with Missing Data." Wiley Series in Probability and Statistics. Wiley, New York, NY.

Lusardi, Annamaria. 1998. "On the Importance of the Precautionary Saving Motive." *American Economic Review* 88, Papers and Proceedings, 449-453.

Malmendier, Ulrike and Stefan Nagel. 2011. "Depression babies: do macroeconomic experiences affect risk-taking?." *Quarterly Journal of Economics* 126, 373-416.

Malmendier, Ulrike and Stefan Nagel. 2013. "Learning from Inflation Experiences." Working Paper.

Malmendier, Ulrike, Geoffrey Tate, and Jon Yan. 2011. "Overconfidence and early-life experiences: the effect of managerial traits on corporate financial policies." *Journal of Finance* 66, 1685-1731.

Mancillas, Adriean. 2006. "Challenging the Stereotypes About Only Children: A Review of the Literature and Implications for Practice." *Journal of Counseling & Development* 84, 268-275.

Matthew, Ervin. 2011. "Effort Optimism in the Classroom Attitudes of Black and White Students on Education, Social Structure, and Causes of Life Opportunities." *Sociology of Education* 84, 225-245.

Merton, Robert C. 1969. "Lifetime Portfolio Selection under Uncertainty: The Continuous-Time Case." *The Review of Economics and Statistics* 51, 247-257.

Modigliani, Franco, and Richard Brumberg. 1954. "Utility analysis and the consumption function: an interpretation of cross-section data." in Kurihara, K.K., ed., Post Keynesian

Economics. New Brunswick: Rutgers University Press, 388-436.

Montalto, Catherine Phillips, and Jaimie Sung. 1996. "Multiple Imputation In The 1992 Survey Of Consumer Finances." *Financial Counseling and Planning* 7, 133-146.

Peress, Joel, and Daniel Schmidt. 2014. "Glued to the TV: The Trading Activity of Distracted Investors." Working Paper.

Puri, Manju, and David T. Robinson. 2007. "Optimism and Economic Choice." *Journal of Financial Economics* 86, 71-99.

Rodgers Joseph L., H. Harrington Cleveland, Edwin van den Oord, and David C. Rowe. 2000. "Resolving the Debate over Birth Order, Family Size, and Intelligence." *American Psychologist*, 55, 599-612.

Rodgers, Joseph L., David C. Rowe, and David F. Harris. 1992. "Sibling Differences in Adolescent Sexual Behavior: Inferring Process Models from Family Composition Patterns." *Journal of the Marriage and the Family* 54, 142-152.

Rosen, Harvey S., and Stephen Wu. 2004. "Portfolio Choice and Health Status." *Journal of Financial Economics* 72, 457-484.

Samuelson, Paul A. 1969. "Portfolio Selection By Dynamic Stochastic Programming." *The Review of Economics and Statistics* 51, 239-246.

Schoar, Antoinette and Luo Zuo. 2011. "Shaped by booms and busts: how the economy impacts CEO career and management styles." NBER Working Paper 17590.

Stewart, Alan E., and Stewart, Elizabeth A. 1995. "Trends in birth-order research: 1976-1993." *Individual Psychology: Journal of Adlerian Theory, Research and Practice* 57, 21-36.

Trimpop, Rüdiger M. 1994. "The Psychology of Risk Taking Behavior." (Advances in Psychology) Elsevier Science B.V.

Woolridge, Jeffrey M. 2008. "Introductory Econometrics." 4th edition, Cengage Learning Emea.

Zajonc, Robert B. 1976. "Family Configuration and Intelligence." *Science* 192, 227-36.

Table 1. Variables

This table presents definitions for the control and the dependent variables used in this study. The data come from the Survey of Consumer Finances.

Panel A - Control variables

Variable	Description	Values
Age	Year of survey - year of birth	
Female	Sex of the respondent	female=1; male=0
White	‘Which of these categories do you feel best describe you: white, black or African-American, Hispanic, Asian, Native American, or another race?’	white=1; other=0
College	‘Did you get a college degree?’	yes=1; no=0
Married	‘Are you currently married, or living with a partner, separated, divorced, widowed, or (have you) never been married?’	married=1; other=0
Children	Does the respondent indicate to have at least one child?	yes=1; no=0
Retired	‘Are you working now, temporarily laid off, unemployed and looking for work, disabled and unable to work, retired, a student, a homemaker, or what?’	retired=1; other=0
Self-employed	‘Do you work for someone else, (are you) self-employed, or what?’	self-employed or partnership=1; other=0
Net income	Net income	
Net worth	Total assets - total liabilities	
Business equity	‘Do you own or share ownership in any privately-held businesses, farms, professional practices, limited partnerships or any other types of partnerships? Do not include corporations with publicly-traded stock.’	yes=1; no=0
Subj. life horizon	Expected age at death - current age	
Nb. siblings	How many living brothers and sisters do you have?	
Fin. wealth >\$5,000	(Quasi-) liquid accounts + certificates of deposit + investment funds + stocks + bonds + cash-value life insurance + other fin. assets	fin. wealth >\$5,000 = 1; other=0

Panel B - Dependent variables

Variable	Description	Values
Saving	‘Over the past year, would you say that your spending exceeded your income, that it was about the same as your income, or that you spent less than your income?’	spent less than income=1; other=0
Pensions	Total retirement accounts + other annuities	
Age retire	Expected age at retirement	
Life insur.	‘[...] are any of your policies individual term insurance?’	yes=1; no=0
Financial advisor	Do you use information from a financial planner or banker to make decisions about borrowing (or investing)?	yes=1; no=0
Shopping around	‘When making major decisions about borrowing (or investing), some people shop around for the very best terms.’	no shopping(0) to great deal of shopping (5)
Risk tolerance	‘Which of the statements on this page comes closest to the amount of financial risk that you are willing to take when you save or make investments?’	willing to take some financial risk=1; other=0
Bond indicator	‘Do you have any (kind of) bonds ?’	yes=1; no=0
Equity indicator	Does the household have a non-zero investment in directly held stock, stock mutual funds, or retirement and saving accounts in stocks?	yes=1; no=0
Equity share	(Directly held stock + stock mutual funds + retirement and saving accounts in stock) / financial assets	
Success investing	‘Overall has there been a gain or loss in the value of this stock since you obtained it?’	gain=1; other=0
Economic optimism	‘Over the next five years, do you expect the U.S. economy as a whole to perform better, worse, or about the same as it has over the past five years?’	better=1; other=0
Income optimism	‘Over the next year, do you expect your total income to go up more than prices, less than prices, or about the same as prices?’	up more=1; other=0
Direct holdings	Directly held stock / (directly held stock + stock mutual funds + retirement and saving accounts in stock)	
Number of stocks	‘In how many different companies do you own stock?’	
Smoker	‘Do you currently smoke?’	yes=1; no=0

Table 2. Descriptive statistics

This table presents descriptive statistics (number of observations and mean, and 25th percentile, median, and 75th percentile for continuous variables) for the explanatory and dependent variables used in this study. All variables are defined in Table 1. Net income and net worth are trimmed at the 1st and 99th percentile. The data come from the Survey of Consumer Finances (1995-2010).

Variable	N	Mean	P25	P50	P75
Firstborn	129,252	0.29			
Number of siblings	120,794	2.51	1	2	4
Age	142,319	50.53	38	50	62
Female	142,319	0.22			
White	142,319	0.79			
College	142,319	0.46			
Married	142,319	0.59			
Children	142,319	0.86			
Retired	142,319	0.17			
Self-employed	142,319	0.24			
Net income	135,211	158,265	24,674	51,712	115,897
Net worth	135,198	1,782,767	17,000	146,955	815,000
Business equity	142,319	0.29			
Subj. life horizon	142,319	32.10	19	31	44
Fin. wealth >\$5,000	135,198	0.77			
Mothers' age at birth	80,088	25.66	22	25	29
Fathers' age at birth	58,221	27.98	24	27	32
Saving	142,319	0.51			
Pensions	82,184	283,731	15,000	66,000	263,300
Age retire	76,296	62.46	60	65	65
Insurance	98,888	0.75			
Advice borrowing	142,319	0.17			
Advice investing	142,319	0.04			
Shop around borrowing	142,319	3.87	3	5	5
Shop around investing	142,319	3.03	2	3	4
Risk tolerance	142,319	0.66			
Bond indicator	142,319	0.26			
Equity indicator	142,319	0.59			
Equity share	84,397	0.49	0.25	0.48	0.73
Success investing	42,243	0.70			
Economic optimism	142,319	0.36			
Income optimism	142,319	0.25			
Stock / Equity	84,397	0.37	0.00	0.00	0.51
Number of stocks	27,276	16.21	2	6	20
Smoker	142,319	0.21			

Table 3. Firstborns and the decision to save, work and take insurance

This table reports the results of a set of regressions explaining the savings behavior, expected retirement age, income and life insurance holdings of households. The logit models in columns 1, 2, 9 and 10 are estimated using maximum likelihood. All other models are estimated using OLS. Other controls include retired, subj. life horizon. All variables are defined in Table 1. The data come from the SCF. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Saving	Saving	ln(pensions)	ln(pensions)	Age retire	Age retire	ln(income)	ln(income)	Life insur.	Life insur.
Firstborn	0.1263*** (0.0381)	0.0891** (0.0432)	0.0954** (0.0376)	0.0473* (0.0287)	0.3389** (0.1459)	0.2629* (0.1468)	0.1669*** (0.0207)	0.0617*** (0.0135)	0.0927** (0.0433)	0.0731* (0.0433)
Female	-0.9403*** (0.0465)	-0.2345*** (0.0673)	-1.2934*** (0.0532)	-0.2790*** (0.0526)	-0.0774 (0.2336)	0.1444 (0.3059)	-1.2347*** (0.0221)	-0.2134*** (0.0197)	-0.0396 (0.0544)	-0.0890 (0.0755)
White	0.3960*** (0.0455)	-0.0460 (0.0526)	0.6436*** (0.0572)	0.2026*** (0.0465)	1.1370*** (0.2235)	1.2175*** (0.2324)	0.7106*** (0.0224)	-0.0248 (0.0158)	0.0493 (0.0560)	0.2216*** (0.0603)
College		0.1097** (0.0447)		0.4897*** (0.0312)		0.5827*** (0.1515)		0.3245*** (0.0135)		0.2670*** (0.0482)
Married		-0.1111** (0.0557)		0.1919*** (0.0411)		0.4603** (0.2112)		0.1864*** (0.0173)		0.2368*** (0.0622)
Children		-0.4776*** (0.0678)		-0.1445*** (0.0492)		0.4635** (0.2314)		0.1555*** (0.0197)		0.0521 (0.0757)
Self-employed		-0.1079* (0.0623)		-0.2752*** (0.0415)		0.8944*** (0.2000)		-0.0003 (0.0203)		-0.2723*** (0.0631)
ln(net income)		0.4085*** (0.0265)		0.0382** (0.0159)		0.2859*** (0.0982)				0.1267*** (0.0243)
ln(net worth)		0.1985*** (0.0155)		0.5277*** (0.0131)		-0.5883*** (0.0715)		0.4117*** (0.0033)		-0.2072*** (0.0180)
Business equity		-0.1302** (0.0628)		-0.2778*** (0.0426)		0.0903 (0.2083)		0.2226*** (0.0191)		0.0214 (0.0647)
ln(pensions)						-0.1907*** (0.0520)				
Other controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Nb. of siblings effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	111,068	111,068	64,532	64,532	41,574	41,574	116,397	116,397	111,068	111,068

Table 4. Firstborns and portfolio choice

This table reports the results of a set of regressions explaining in Panel A the risk tolerance, bond and equity market participation; and in Panel B the equity share and investment success, conditional on owning equities. All logit models in Panel A and columns 3 and 4 of Panel B are estimated using maximum likelihood. All other models are estimated using OLS. Other controls include business equity, subj. life horizon. All variables are defined in Table 1. The data come from the SCF. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A - Participation in the stock market

	Risk tolerance	Risk tolerance	Bond indicator	Bond indicator	Equity indicator	Equity indicator
Firstborn	0.0614*** (0.0204)	0.0429* (0.0235)	0.0628** (0.0244)	0.0455* (0.0256)	0.0697*** (0.0227)	0.0442* (0.0248)
Female	-0.5701*** (0.0221)	-0.1831*** (0.0336)	-0.3126*** (0.0349)	0.0528 (0.0472)	-0.5492*** (0.0325)	-0.1083** (0.0447)
White	0.5028*** (0.0232)	0.2591*** (0.0274)	0.4298*** (0.0384)	0.3386*** (0.0407)	0.3932*** (0.0338)	0.1757*** (0.0371)
College		0.4772*** (0.0246)		0.2498*** (0.0273)		0.3598*** (0.0258)
Children		-0.1296*** (0.0359)		0.1905*** (0.0441)		-0.1582*** (0.0399)
Retired		0.0202 (0.0401)		0.1418*** (0.0403)		0.0897** (0.0423)
Self-employed		-0.0124 (0.0367)		-0.1180*** (0.0351)		-0.1280*** (0.0345)
ln(net income)		0.1814*** (0.0138)		-0.0002 (0.0142)		0.0559*** (0.0142)
ln(net worth)		0.1376*** (0.0077)		0.1480*** (0.0113)		0.2587*** (0.0112)
Other controls	No	Yes	No	Yes	No	Yes
Nb. of siblings effects	Yes	Yes	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	100,047	100,047	79,926	79,926	79,926	79,926

Panel B - Equity share and success investing, conditional on holding equities

	Equity share	Equity share	Success investing	Success investing
Firstborn	0.0170*** (0.0059)	0.0132** (0.0058)	0.0748** (0.0368)	0.0630* (0.0381)
Female	-0.0434*** (0.0086)	-0.0359*** (0.0116)	-0.2452*** (0.0627)	0.0381 (0.0796)
White	0.0362*** (0.0093)	0.0294*** (0.0096)	0.3426*** (0.0647)	0.2443*** (0.0674)
College		0.0489*** (0.0064)		0.1584*** (0.0436)
Married		-0.0146 (0.0091)		0.0517 (0.0583)
Children		0.0037 (0.0109)		0.1210* (0.0643)
Retired		-0.0138 (0.0100)		0.0124 (0.0629)
Self-employed		-0.0364*** (0.0085)		-0.1440*** (0.0508)
ln(net income)		0.0040 (0.0034)		0.0547** (0.0219)
ln(net worth)		0.0111*** (0.0027)		0.1137*** (0.0186)
Business equity		-0.0076 (0.0086)		0.0168 (0.0513)
Subj. life horizon		0.0008** (0.0003)		0.0020 (0.0017)
Nb. of siblings effects	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	65,219	65,219	36,791	36,791

Table 5. Firstborns and the seeking of information

This table reports the results of a set of regressions explaining in Panel A the seeking of financial advice by households when borrowing and investing, and in Panel B the shopping around at different banks to compare the conditions offered when borrowing and investing. All logit models are estimated using maximum likelihood. All variables are defined in Table 1. The data come from the SCF. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A - Seeking financial advice when making financial decisions

	Borrowing	Borrowing	Investing	Investing
Firstborn	0.0810** (0.0399)	0.0788* (0.0420)	0.1438*** (0.0308)	0.0637* (0.0336)
Female	-0.1055** (0.0482)	0.3264*** (0.0693)	-0.4688*** (0.0347)	0.0542 (0.0501)
White	0.2373*** (0.0512)	0.0026 (0.0574)	0.6433*** (0.0351)	0.2570*** (0.0404)
College		0.3555*** (0.0456)		0.6505*** (0.0330)
Married		0.0721 (0.0587)		0.1611*** (0.0418)
Children		-0.1546** (0.0678)		-0.2291*** (0.0484)
Retired		0.1609** (0.0721)		0.1031* (0.0561)
Self-employed		0.0159 (0.0587)		-0.1906*** (0.0461)
ln(net income)		-0.0353 (0.0219)		0.0277 (0.0173)
ln(net worth)		0.1772*** (0.0159)		0.1760*** (0.0114)
Business equity		0.0319 (0.0603)		-0.0520 (0.0464)
Subj. life horizon		0.0049*** (0.0018)		0.0049*** (0.0014)
Nb. of siblings effects	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	116,855	116,855	116,855	116,855

Panel B - Comparing bank conditions when making financial decisions

	Borrowing	Borrowing	Investing	Investing
Firstborn	0.0500** (0.0249)	0.0457** (0.0227)	0.0571*** (0.0206)	0.0356* (0.0213)
Female	0.7534*** (0.0284)	-0.0489 (0.0347)	-0.1950*** (0.0219)	0.0197 (0.0300)
White	-0.7756*** (0.0295)	-0.3755*** (0.0289)	0.0412* (0.0222)	-0.1357*** (0.0244)
College		0.0292 (0.0244)		0.1767*** (0.0210)
Married		-0.5132*** (0.0297)		0.0715*** (0.0260)
Children		-0.2186*** (0.0357)		-0.0285 (0.0303)
Retired		-0.0012 (0.0402)		0.0521 (0.0344)
Self-employed		0.1172*** (0.0342)		-0.0066 (0.0289)
ln(net income)		0.2771*** (0.0119)		-0.0382*** (0.0107)
ln(net worth)		-0.3871*** (0.0076)		0.1030*** (0.0071)
Business equity		0.2360*** (0.0339)		-0.0787*** (0.0292)
Subj. life horizon		0.0024** (0.0010)		0.0059*** (0.0008)
Nb. of siblings effects	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	116,855	116,855	116,855	116,855

Table 6. Firstborns and optimism, mitigation or reinforcement

This table reports the results of a set of regressions explaining the equity market participation and risky share allocation of households. The logit model in columns 1 to 3 are estimated using maximum likelihood. All other models are estimated using OLS. Optimism (PR, 2007) is a continuous variable of the miscalibration in life expectancy as in Puri and Robinson (2007). Positive past S&P return is an indicator if the S&P 500 had a positive return in the year starting 24 months prior to the interview. All other variables are defined in Table 1. The data come from the SCF. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Equity indicator	Equity indicator	Equity indicator	Equity share	Equity share	Equity share
Firstborn X optimism (PR, 2007)	0.0044* (0.0024)			0.0006 (0.0007)		
Firstborn X economic optimism		0.0096 (0.0489)			0.0204* (0.0120)	
Firstborn X positive past S&P return			0.0983** (0.0500)			0.0223* (0.0131)
Firstborn	0.0311 (0.0258)	0.0405 (0.0309)	-0.0169 (0.0405)	0.0123** (0.0059)	0.0057 (0.0074)	-0.0014 (0.0102)
Optimism (PR, 2007)	-0.0010 (0.0014)			0.0001 (0.0005)		
Economic optimism		-0.0058 (0.0306)			0.0096 (0.0079)	
Positive past S&P return			1.1672*** (0.2484)			-0.0077 (0.0560)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Nb. of siblings effects	Yes	Yes	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	No	No
Observations	79,926	79,926	79,926	65,219	65,219	65,219

Table 7. Firstborns, only children and portfolio choice

This table reports the results of a set of regressions explaining in Panel A the risk tolerance, bond and equity market participation; and in Panel B the equity share and investment success, conditional on owning equities. All logit models in Panel A and columns 3 and 4 of Panel B are estimated using maximum likelihood. All other models are estimated using OLS. Only child is an indicator if the respondent does not have any siblings. Other controls include self-employed, business equity, married, subj. life horizon and retired. All variables are defined in Table 1. The data come from the SCF. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A - Participation in the stock market

	Risk tolerance	Risk tolerance	Bond indicator	Bond indicator	Equity indicator	Equity indicator
Firstborn	0.0581*** (0.0204)	0.0427* (0.0234)	0.0617** (0.0244)	0.0447* (0.0255)	0.0590** (0.0231)	0.0434* (0.0249)
Only child	-0.0268 (0.0557)	0.0264 (0.0642)	-0.0246 (0.0510)	-0.0019 (0.0529)	-0.0277 (0.0637)	-0.0155 (0.0689)
Female	-0.5791*** (0.0207)	-0.1814*** (0.0316)	-0.3103*** (0.0320)	0.0654 (0.0437)	-0.5375*** (0.0311)	-0.0929** (0.0421)
White	0.5156*** (0.0219)	0.2620*** (0.0261)	0.4190*** (0.0365)	0.3185*** (0.0383)	0.4207*** (0.0329)	0.2078*** (0.0361)
College		0.4662*** (0.0229)		0.2377*** (0.0256)		0.3540*** (0.0247)
Children		-0.1327*** (0.0337)		0.1406*** (0.0415)		-0.1401*** (0.0378)
ln(net income)		0.1701*** (0.0127)		-0.0047 (0.0132)		0.0453*** (0.0139)
ln(net worth)		0.1399*** (0.0072)		0.1561*** (0.0106)		0.2640*** (0.0107)
Other controls	No	Yes	No	Yes	No	Yes
Nb. of siblings effects	Yes	Yes	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	111,068	111,068	89,101	89,101	89,101	89,101

Panel B - Equity share and success investing, conditional on holding equities

	Equity share	Equity share	Success investing	Success investing
Firstborn	0.0167*** (0.0059)	0.0131** (0.0058)	0.0730** (0.0367)	0.0616* (0.0380)
Only child	-0.0004 (0.0099)	0.0048 (0.0099)	0.0336 (0.0548)	0.0391 (0.0563)
Female	-0.0375*** (0.0078)	-0.0305*** (0.0104)	-0.2811*** (0.0565)	0.0284 (0.0721)
White	0.0360*** (0.0092)	0.0300*** (0.0092)	0.3239*** (0.0623)	0.2278*** (0.0649)
College		0.0527*** (0.0061)		0.1562*** (0.0404)
Married		-0.0159* (0.0083)		0.0756 (0.0533)
Children		0.0079 (0.0105)		0.1001* (0.0598)
Retired		-0.0142 (0.0091)		-0.0153 (0.0568)
Self-employed		-0.0322*** (0.0080)		-0.1248*** (0.0467)
ln(net income)		0.0019 (0.0032)		0.0603*** (0.0213)
ln(net worth)		0.0119*** (0.0025)		0.1128*** (0.0179)
Business equity		-0.0117 (0.0083)		0.0047 (0.0472)
Subj. life horizon		0.0008** (0.0003)		0.0018 (0.0017)
Nb. of siblings effects	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	72,477	72,477	41,386	41,386

Table 8. Firstborns, last borns and portfolio choice

This table reports the results of a set of regressions explaining in Panel A the risk tolerance, bond and equity market participation; and in Panel B the equity share and investment success, conditional on owning equities. All logit models in Panel A and columns 3 and 4 of Panel B are estimated using maximum likelihood. All other models are estimated using OLS. Last born is an indicator if the respondent is the youngest sibling in the family. Other controls include business equity, married, children, subj. life horizon and retired. All other variables are defined in Table 1. The data come from the SCF. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A - Participation in the stock market

	Risk tolerance	Risk tolerance	Bond indicator	Bond indicator	Equity indicator	Equity indicator
Firstborn	0.0588*** (0.0204)	0.0429* (0.0234)	0.0620** (0.0244)	0.0450* (0.0256)	0.0627*** (0.0231)	0.0429* (0.0250)
Last born	0.0664 (0.0802)	0.0146 (0.0900)	0.0569 (0.1344)	0.0438 (0.1397)	-0.0724 (0.1302)	-0.1015 (0.1411)
Female	-0.5791*** (0.0207)	-0.1814*** (0.0316)	-0.3103*** (0.0320)	0.0655 (0.0437)	-0.5353*** (0.0310)	-0.0929** (0.0421)
White	0.5159*** (0.0219)	0.2620*** (0.0261)	0.4189*** (0.0365)	0.3186*** (0.0383)	0.4165*** (0.0328)	0.2077*** (0.0361)
College		0.4662*** (0.0229)		0.2377*** (0.0256)		0.3539*** (0.0247)
Self-employed		0.0105 (0.0345)		-0.1241*** (0.0328)		-0.1061*** (0.0324)
ln(net income)		0.1701*** (0.0127)		-0.0046 (0.0132)		0.0452*** (0.0139)
ln(net worth)		0.1399*** (0.0072)		0.1560*** (0.0106)		0.2641*** (0.0107)
Other controls	No	Yes	No	Yes	No	Yes
Nb. of siblings effects	Yes	Yes	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	111,068	111,068	89,101	89,101	89,101	89,101

Panel B - Equity share and success investing, conditional on holding equities

	Equity share	Equity share	Success investing	Success investing
Firstborn	0.0168*** (0.0059)	0.0131** (0.0058)	0.0734** (0.0367)	0.0618 (0.0380)
Last born	0.0084 (0.0443)	0.0097 (0.0448)	0.0940 (0.2560)	0.0545 (0.2642)
Female	-0.0375*** (0.0078)	-0.0305*** (0.0104)	-0.2809*** (0.0565)	0.0286 (0.0721)
White	0.0361*** (0.0091)	0.0300*** (0.0092)	0.3232*** (0.0623)	0.2274*** (0.0649)
College		0.0527*** (0.0061)		0.1562*** (0.0404)
Married		-0.0159* (0.0083)		0.0758 (0.0533)
Children		0.0079 (0.0105)		0.1001* (0.0598)
Retired		-0.0142 (0.0091)		-0.0152 (0.0568)
Self-employed		-0.0322*** (0.0080)		-0.1247*** (0.0467)
ln(net income)		0.0019 (0.0031)		0.0604*** (0.0213)
ln(net worth)		0.0119*** (0.0025)		0.1128*** (0.0179)
Business equity		-0.0117 (0.0083)		0.0046 (0.0472)
Subj. life horizon		0.0008** (0.0003)		0.0018 (0.0017)
Nb. of siblings effects	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	72,477	72,477	41,386	41,386

Table 9. Firstborns, parents' age at birth and portfolio choice

This table reports the results of a set of regressions explaining in Panel A the risk tolerance, bond and equity market participation; and in Panel B the equity share and investment success, conditional on owning equities. All logit models in Panel A and columns 3 and 4 of Panel B are estimated using maximum likelihood. All other models are estimated using OLS. Mutation risk - mother and mutation risk - father are indicators if the mother or father were older than 35 or 45 at the respondent's age of birth, respectively. Other controls include ln(net income), ln(net worth), married, subj. life horizon, retired and self-employed. All variables are defined in Table 1. The data come from the SCF. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A - Participation in the stock market

	Risk tolerance	Risk tolerance	Bond indicator	Bond indicator	Equity indicator	Equity indicator
Firstborn	0.0438*	0.0350	0.0485*	0.0501*	0.0484*	0.0433*
	(0.0236)	(0.0236)	(0.0257)	(0.0258)	(0.0249)	(0.0250)
Mutation risk - mother	0.0227		0.0771		0.1012*	
	(0.0540)		(0.0615)		(0.0576)	
Mutation risk - father	-0.0898		-0.2314		-0.6103	
	(0.3041)		(0.4639)		(0.5008)	
Mother age at birth		0.0005		-0.0004		-0.0001
		(0.0004)		(0.0004)		(0.0004)
Father age at birth		0.0010**		-0.0002		0.0003
		(0.0004)		(0.0004)		(0.0004)
Female	-0.1832***	-0.1832***	0.0529	0.0526	-0.1075**	-0.1080**
	(0.0336)	(0.0336)	(0.0472)	(0.0472)	(0.0447)	(0.0447)
White	0.2588***	0.2554***	0.3378***	0.3399***	0.1740***	0.1746***
	(0.0274)	(0.0275)	(0.0407)	(0.0407)	(0.0371)	(0.0371)
College	0.4768***	0.4738***	0.2485***	0.2511***	0.3583***	0.3593***
	(0.0246)	(0.0246)	(0.0273)	(0.0274)	(0.0258)	(0.0258)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Nb. of siblings effects	Yes	Yes	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	34,217	34,217	24,877	24,877	24,877	24,877

Panel B - Equity share and success investing, conditional on holding equities

	Equity share	Equity share	Success investing	Success investing
Firstborn	0.0137** (0.0059)	0.0139** (0.0059)	0.0718* (0.0385)	0.0718* (0.0385)
Mutation risk - mother	0.0111 (0.0143)		-0.0246 (0.0898)	
Mutation risk - father	-0.0158 (0.1095)		-1.7306** (0.7745)	
Mother age at birth		-0.0002* (0.0001)		-0.0007 (0.0006)
Father age at birth		0.0001 (0.0001)		-0.0008 (0.0006)
Female	-0.0358*** (0.0116)	-0.0359*** (0.0116)	0.0376 (0.0797)	0.0376 (0.0797)
White	0.0293*** (0.0096)	0.0292*** (0.0096)	0.2463*** (0.0675)	0.2459*** (0.0674)
College	0.0488*** (0.0064)	0.0490*** (0.0064)	0.1601*** (0.0437)	0.1609*** (0.0437)
Married	-0.0146 (0.0091)	-0.0147 (0.0092)	0.0517 (0.0583)	0.0529 (0.0583)
Children	0.0038 (0.0109)	0.0039 (0.0109)	0.1164* (0.0644)	0.1200* (0.0643)
Retired	-0.0137 (0.0100)	-0.0142 (0.0101)	0.0159 (0.0629)	0.0134 (0.0629)
Self-employed	-0.0363*** (0.0084)	-0.0364*** (0.0084)	-0.1486*** (0.0509)	-0.1424*** (0.0508)
ln(net income)	0.0041 (0.0034)	0.0041 (0.0034)	0.0550** (0.0220)	0.0562** (0.0220)
ln(net worth)	0.0110*** (0.0027)	0.0111*** (0.0027)	0.1144*** (0.0186)	0.1134*** (0.0186)
Business equity	-0.0076 (0.0086)	-0.0077 (0.0086)	0.0215 (0.0513)	0.0175 (0.0513)
Subj. life horizon	0.0007* (0.0004)	0.0007* (0.0004)	0.0009 (0.0018)	0.0009 (0.0018)
Nb. of siblings effects	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	16,198	16,198	8,962	8,962

Table 10. Firstborns, gender and portfolio choice

This table reports the results of a set of regressions explaining the risk tolerance, bond and equity market participation, and conditional on participation, the equity share and investment success. The logit models in columns 1, 2, 3 and 5 are estimated using maximum likelihood. All other models are estimated using OLS. All variables are defined in Table 1. The data come from the SCF. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Risk tolerance	Bond indicator	Equity indicator	Equity share	Success investing
Firstborn	0.0596** (0.0264)	0.0343 (0.0275)	0.0603** (0.0263)	0.0108* (0.0062)	0.0649* (0.0395)
Firstborn X Female	-0.0770 (0.0547)	0.0925 (0.0752)	-0.1338* (0.0726)	0.0207 (0.0185)	-0.0224 (0.1325)
Female	-0.1580*** (0.0384)	0.0183 (0.0542)	-0.0598 (0.0517)	-0.0433*** (0.0130)	0.0466 (0.0949)
White	0.2594*** (0.0274)	0.3386*** (0.0407)	0.1766*** (0.0371)	0.0292*** (0.0096)	0.2446*** (0.0674)
College	0.4768*** (0.0246)	0.2504*** (0.0273)	0.3594*** (0.0258)	0.0491*** (0.0064)	0.1584*** (0.0436)
Married	-0.1010*** (0.0295)	0.1775*** (0.0371)	0.0531 (0.0348)	-0.0146 (0.0091)	0.0518 (0.0583)
Children	-0.1294*** (0.0359)	0.1905*** (0.0441)	-0.1578*** (0.0399)	0.0037 (0.0109)	0.1212* (0.0643)
Retired	0.0193 (0.0401)	0.1417*** (0.0403)	0.0901** (0.0423)	-0.0140 (0.0100)	0.0128 (0.0629)
Self-employed	-0.0119 (0.0368)	-0.1187*** (0.0351)	-0.1275*** (0.0345)	-0.0366*** (0.0085)	-0.1440*** (0.0508)
ln(net income)	0.1815*** (0.0138)	-0.0004 (0.0142)	0.0560*** (0.0142)	0.0040 (0.0034)	0.0547** (0.0219)
ln(net worth)	0.1375*** (0.0077)	0.1482*** (0.0114)	0.2587*** (0.0112)	0.0111*** (0.0027)	0.1137*** (0.0186)
Business equity	0.0766** (0.0365)	-0.1404*** (0.0356)	-0.0585* (0.0343)	-0.0076 (0.0086)	0.0169 (0.0513)
Subj. life horizon	0.0072*** (0.0012)	-0.0013 (0.0013)	0.0044*** (0.0015)	0.0008** (0.0003)	0.0020 (0.0017)
Nb. of siblings effects	Yes	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes
Observations	100,047	79,926	79,926	65,219	36,791

Table 11. Firstborns, optimism, stock picking, and additional robustness tests

This table reports the results of a set of regressions explaining economic and income optimism, stock picking, and educational attainment as well as smoking behavior. The logit models in columns 1, 2, 5 and 6 are estimated using maximum likelihood. All other models are estimated using OLS. All variables are defined in Table 1. The data come from the SCF. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Economic optimism	Income optimism	Stock / Equity	ln(number of stocks)	College	Smoker
Firstborn	-0.0254 (0.0222)	0.0226 (0.0248)	0.0024 (0.0070)	-0.0557* (0.0321)	0.0660*** (0.0240)	-0.0516** (0.0244)
Female	-0.1339*** (0.0358)	-0.1023** (0.0410)	-0.0075 (0.0130)	-0.0565 (0.0703)	0.1385*** (0.0381)	-0.2930*** (0.0341)
White	-0.2797*** (0.0289)	-0.2175*** (0.0322)	-0.0048 (0.0110)	-0.0084 (0.0632)	-0.0138 (0.0318)	0.2200*** (0.0291)
College	0.0806*** (0.0244)	0.1655*** (0.0266)	-0.0016 (0.0073)	0.2483*** (0.0386)		-0.4439*** (0.0260)
Married	-0.0312 (0.0298)	-0.0901*** (0.0328)	-0.0384*** (0.0100)	-0.0658 (0.0508)	0.1098*** (0.0315)	-0.3646*** (0.0294)
Children	0.0261 (0.0377)	-0.0275 (0.0402)	-0.0074 (0.0126)	-0.0311 (0.0600)	-0.4435*** (0.0392)	0.1647*** (0.0364)
Retired	-0.0684* (0.0367)	-0.1548*** (0.0433)	0.0477*** (0.0115)	0.0949* (0.0506)		-0.0287 (0.0450)
Self-employed	0.0417 (0.0321)	0.0493 (0.0337)	0.0006 (0.0097)	0.0226 (0.0413)	-0.1407*** (0.0340)	-0.0485 (0.0378)
ln(net income)	-0.0230* (0.0119)	0.1201*** (0.0130)	0.0245*** (0.0041)	0.0398** (0.0190)	0.2539*** (0.0135)	-0.0286** (0.0134)
ln(net worth)	0.0122 (0.0079)	0.0334*** (0.0089)	0.0392*** (0.0031)	0.3191*** (0.0165)	0.1386*** (0.0087)	-0.0828*** (0.0076)
Business equity	0.0038 (0.0326)	0.1814*** (0.0349)	0.0148 (0.0098)	-0.0276 (0.0426)	0.0197 (0.0343)	-0.0514 (0.0381)
Subj. life horizon	0.0077*** (0.0011)	0.0097*** (0.0013)	-0.0003 (0.0004)	-0.0010 (0.0021)	0.0159*** (0.0013)	-0.0136*** (0.0009)
Nb. of siblings effects	Yes	Yes	Yes	Yes	Yes	Yes
Age effects	Yes	Yes	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	111,068	99,947	65,219	27,276	64,532	41,574

Table 12. Robustness tests with family fixed effects using an alternative dataset

This table examines savings behavior, income, insurance and equity holdings of households, excluding and including family fixed effects. The logit models in columns 5 to 8 are estimated using maximum likelihood. All other models are estimated using OLS. The data come from the PSID. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	ln(saving)	ln(saving)	ln(net income)	ln(net income)	Insurance	Insurance	Equity indicator	Equity indicator
Firstborn	0.1272* (0.0771)	0.2015** (0.0991)	0.2743** (0.1225)	0.3249** (0.1436)	0.1185*** (0.0173)	0.1194*** (0.0300)	0.3154* (0.1886)	0.3682** (0.1861)
Female	-0.1620* (0.0893)	-0.3246*** (0.1253)	-0.6107*** (0.1350)	-0.4876*** (0.1710)	1.1093*** (0.1522)	1.4752*** (0.2594)	0.4998* (0.2690)	0.5994** (0.3019)
White	0.1417* (0.0801)	-0.1530 (0.3152)	0.2422* (0.1281)	0.4240 (0.4703)	0.2554* (0.1551)	2.1760** (1.0674)	-0.4385 (0.2693)	-0.5802 (0.6464)
College	0.6907*** (0.0867)	0.2841* (0.1492)	0.7507*** (0.1387)	0.6368*** (0.2189)	0.8646*** (0.2369)	0.5469 (0.4326)	0.3240* (0.1830)	0.3582 (0.2393)
Married	0.1799* (0.0919)	-0.0295 (0.1338)	1.2425*** (0.1444)	1.2477*** (0.1894)	1.6788*** (0.1912)	2.3703*** (0.3529)	0.4197* (0.2309)	0.5938** (0.2679)
Retired	0.3687** (0.1751)	0.4745** (0.2395)	-3.4254*** (0.2699)	-2.8919*** (0.3502)	0.0445 (0.3301)	0.8710 (0.6089)	0.3578 (0.3448)	0.4245 (0.3889)
ln(net income)	-0.0100 (0.0114)	-0.0071 (0.0164)			0.0047 (0.0176)	0.0070 (0.0276)	0.0607* (0.0353)	0.0956** (0.0410)
ln(net worth)	0.3032*** (0.0137)	0.3226*** (0.0201)	0.3008*** (0.0164)	0.2802*** (0.0217)	0.3087* (0.1669)	0.5441** (0.2552)	0.4851*** (0.0652)	0.4999*** (0.0782)
Nb. of siblings effects	Yes	No	Yes	No	Yes	No	Yes	No
Family effects	No	Yes	No	Yes	No	Yes	No	Yes
Age effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,915	1,915	3,578	3,578	1,915	1,915	3,578	3,578