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AWARENESS AND FAMILY EFFECTS AS DETERMINANTS OF STOCK MARKET PARTICIPATION

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I hereby declare that I have compiled the thesis independently
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The document length is 9327 words from the introduction to the end of conclusion.

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ABSTRACT

This thesis explores determinants of stock market participation, specifically educational family background and the awareness of the own investment skills. The data is collected through a non-representative online survey and results in 224 observations. Two study hypotheses are tested using nine cross-sectional logistic regressions. The results show that parents' master's degree does not have a predictive power over the individual's stock market participation. At the same time, awareness of own investment skills has a positive association with participation even when controlling for a range of socio-economic factors, including financial litracy.

Keywords: stock market participation, awareness, family effects, parents' education

INTRODUCTION

Investing in different financial instruments has seen an increase in Finland recently. After recovering from the coronavirus stock market crash, the stock market has been booming since. It seems like young individuals are more interested in stocks and the different kinds of assets we have in the market. Stock is perhaps the most recognized asset for the public people. The problem is that if we all have the same information about the stock market that it has been profitable in the long run, why still do some households decide to not participate. Stock market participation has been studied for several years, but still, it remains understudied. Most individuals are interested in earning extra euros, although for many the stock market doesn't provide still the sufficient attractiveness to participate.

Studying stock market participation through financial behavior allows us to analyze different determinants which influence positively or negatively stock market participation. Awareness and family effects have been studied previously, but specifically, awareness on own investment skills haven't been previously examined. Researching financial behavior, only the sky is the limit. The family effect has a gap in previous literature. Family effects are important because we learn many different things from our family. Understanding what kind of influences family can have on stock market participation is useful information for us.

This thesis looks at previously studied determinants for stock market participation and especially family and awareness effects as predictors to stock market participation. A family is a place where a lot of information is shared in an honest manner and trust in the information you receive from your family members is a lot bigger compared to information received from a random person. We spend a lot of our childhood and young adult life with our parents, so it's vital to know how parents do influence our participation in the stock market. To examine the effects of awareness of own investment skills give us valuable information concerning stock market participation.

The study aims to find out if individuals who are more aware of their investment skills invest more in stocks and concerning family effects we want to know that does parents' education influence

children's stock market participation. Awareness and family effects haven't been studied in a way like this previously.

The main research questions for this study are:

1. Does being aware on own investment skills lead to higher stock market participation?
2. Does parents higher education lead to higher stock market participation?
3. Which other factors influence the stock market participation and do they follow the same line as previous literature?

Based on the aim and the research questions, two main hypotheses were developed.

The hypotheses for this study are:

1. Individuals who are more aware of their investment skills have a higher likelihood of participating in the stock market.
2. A parent who has a master's degree has a positive influence on the children to participate in the stock market.

Focus on the study is with all types of individuals, gaining information from participants and non-participants is valuable information. Most important is finding out levels of awareness and family effects and does these differ between participants and non-participants. Results are going to be analyzed based on theoretical contradiction and data is collected with a survey, which consists of 4 main sections and 21 questions. The size of the sample is 224.

1. LITERATURE REVIEW

In this section of the thesis, prior literature concerning stock market participation is reviewed. First, I will go through some previously studied determinants which influence the participation rates. The second part will cover in detailed hypothesis determinants awareness and family effects on stock market participation. The third part will explain the development of hypotheses.

1.1. Stock Market Participation

To participate in the stock market, you must purchase a listed company's stock from a stock market or buying from an over-the-counter market a companies stock that is not listed. Many individuals nowadays can be seen as participants in the stock market by buying a share of a mutual fund. A mutual fund that invests in direct stocks can be seen as stock market participation. In this study stock market participation is only approved if an individual invests directly into stocks, without a mutual fund. Behavioral finance explains the differences between household financing decisions, these financing decisions can be used to predict outcomes in participation rates. The "Participation puzzle" tries to find out determinants which influence participation and find reasons why the majority does not hold stocks, even though the majority have access to the same information (Van Rooij, Lusardi, and Alessie, 2011).

Investing in stocks is not a new idea. From 1792 the New York Stock exchange has been trading securities. Stocks can be bought and sold in the public stock market. When a stock order is made and you receive the asset, the individual can be called a stockholder. Stocks can be traded again. Stock is perhaps the known asset of all, looking from the perspective of the public. Stocks are seen as a risky asset and are riskier than many other common assets, like mutual funds, bonds, crowdfunding. The reason for stocks' high risk can be explained by their volatility levels. High volatility of the stock means that the value changes more often compared to other assets and this causes larger movements in the market price. On the other hand, risk-free assets like most government bonds do not have the volatility like stocks, the risk-reward trade-off is prominent

because the government bonds' historical profits have been many times lower in risk-free assets comapred to stocks. The equity premium is the difference between investing in stocks and a risk-free asset. The equity premium is the expected return you receive when you are willing to take more risk compared to the risk-free asset. Mehra and Prescott (1985) explain the limited stock market participation by equity premium puzzle, which means that the equity premium cannot be explained by classical theories, due to this, studies have grown a lot in the field of financial behavior and what are the causes for limited stock market participation.

To understand more about limitations to stock market participation, we will go through some previously studied determinants:

- Gender

Almenberg and Dreber (2012) studied the gender gap in stock market participation and found out that men are more likely to invest in stocks and the gender gap is influenced a lot by basic financial literacy. Women are more risk-averse and financially illiterate compared to men (Almenberg and Dreber, 2012). Barber and Odean (1998) found out that men trade 67 percent more than women, bigger trading volumes from men were explained by overconfidence. According to Van Rooij et al. (2011), women are less likely to participate in the stock market compared to men, they found also that most women rank into the lowest quartile in advanced financial literacy.

- Age

Age has been also an interesting and important determinant to study, it has been determined significant in many previous studies. Bogan (2006) stated that older households are the least probable to hold stocks or participate in the stock market. Van Rooij et al. (2011), discovered that literacy is lowest for a young person and highest for the middle-aged. Literacy is associated with stock market participation and knowing this we understand why the middle-aged the biggest age group for stockholders are.

Previous studies imply that younger generations are more aware of financial products and this had an influence on the stock market participation (Guiso and Jappelli, 2005). Differing from many previous studies, Gardini and Magi (2007) discovered that in Italian households age does not play a huge influencer in stock market participation.

- Education

Education is the access for knowledge and awareness in general, individuals with a higher understanding of economics and finance are seen as a significant influencer for stock market participation (Van Rooij et al., (2011). According to Laakso (2010), demographic variable like education has a big influence on participation but cannot alone explain individual stock market participation. Education and financial awareness have a positive correlation when we measure stock market participation rates (Guiso and Jappelli, 2005).

Education has been strongly linked with financial literacy in previous studies. Education is a common socio-demographic variable and an important determinant for stock market participation. Van Rooij et al. (2011), stated that education is associated with financial literacy, and the more you receive economics in your education, this influences for advanced knowledge. Employer-based financial education has a positive influence on stock market participation and financial education received in high school increases the propensity to save when you are an adult (Yoong, 2010). Studies also found out that as general education increases for individuals the likelihood for stock market participation increases (Yoong, 2010; Hong, Kubik and Stein 2001). Compiling previous findings, we can say that education has a positive influence on stock market participation.

- Financial Literacy

All countries should be interested in their citizens' financial literacy. Low financial literacy forms a barrier to wealth building. Low financial literacy generates economical disadvantages for everyone on a national level (Kadoya, Khan, and Rabbani, 2017). Financial literacy has been studied extensively previously. Financial literacy is not only about knowing the different assets available on the market or how does inflation work, but it can also mean straightforwardly that how we manage our money, according to (Remund, 2010).

People who possess lower financial literacy are less likely to participate in the stock market according to (Van Rooij et al. 2011; Sivaramakrishnan, Srivastava, Rastogi 2017). Van Rooij et al. (2011) have found out also that higher advanced financial literacy influences positively participation rates and that higher financial literacy do not correlate with saving accounts. According to Kadoya et al. (2017), a lack of financial literary decreases the likelihood of investing

in riskier assets. Financial literacy is higher for people who have a higher income and is lower for people who are younger and older individuals (Spataro, Luca, Corsini, Lorenzo, 2013). It has been found out that higher financial literacy is positively correlated with wealth and lower risk aversion (Arrondel, Debbich, and Savignac, 2012).

- Wealth

Wealth and income levels are positively associated with stock market participation (Van Rooij et al., 2011). Fixed costs may be a barrier to entry into the stock market. Wealthier individuals/households have better capabilities of handling participation costs (Laakso, 2011). If the money and time you spend on investing is seen as a fixed cost, this explains why wealthier households have a lower barrier to entry the stock market (Bertaut, 1998; Guiso et al., 2003). Campbell (2006) found out that, besides fixed cost barriers wealthy households can see psychological barriers between participation and this is the reason why wealthy households do not always participate. Guiso and Jappelli (2005) found out that, wealth and awareness are positively linked to each other. Besides awareness, Van Rooij et al., (2011) found out that wealth accumulation and financial literacy are influenced by each other. Households with higher education and wealth are more financially sophisticated and have a lower probability of making investment mistakes (Calvet, Campbell, Sodini, 2009).

- Trust

Trust means reliability on something or towards something, due to this trust can be studied from many different aspects. Guiso and Jappelli (2005), defined trust as a subjective probability for an individual to get cheated. Different countries may have different levels of generalized trust. Individuals' previous experiences from the stock market play a major role if the stock market is not previously familiar (Guiso and Jappelli, 2005).

According to, Guiso and Jappelli (2005) higher trust towards individuals influences higher stock market participation. Georgarakos and Pasini (2009) found out also that a higher trust towards financial advice and in the financial intermediaries correlates with higher stock market participation, also countries that have a generally low average trust can implicate low participation rates. Stock market literacy can act as a barrier to a given level of trust, but household trust has a probability to explain stock market participation, according to (Balloch, Nicolae, Philip, 2015). According to Guiso and Jappelli (2005) individuals' priors reflect trust, meaning that more

educated individuals have a positive influence on trust. We can assume that trust and financial literacy influence each other. Trust and sociability have a link to each other and are influenced by each other (Georgarakos and Pasini, 2009).

- Overconfidence

Numerous researchers have studied overconfidence because obtaining information about individuals' biases is useful information regarding stock market participation. Xia, Wang, and Li (2014) describe an overconfident person as being optimistic about their future positive accomplishments which have been influenced by their actions.

Behavioral finance has a lot of previous studies relating to psychological factors and how do these factors influence stock market participation. Overconfidence alone as a psychological factor has been found out to increase the probability of trading activity and stockholding (Grinblatt and Keloharju, 2006). Overconfidence and low cognitive skills are linked together and people with high overconfidence tend to underestimate financial risks and due to this influence to higher stock market participation (Laakso, 2010).

- Risk Aversion

In investing, the risk is usually associated with price change and price change is measured as volatility. A risk-averse investor prefers lower returns with lower risks compared to higher returns, but unknown risks. Risk aversion as a factor alone cannot explain the participation rate and stockholding, stated by (Haliassos and Bertaut, 1995). According to Van Rooij et al (2011), stockholding decreases when risk aversion increases. In the study of Almenberg and Dreber (2012), it is stated that women are more risk-averse compared to men and this influences participation rates. Barberis et al., (2003), found out also that regret on own investment decisions influences investment behavior. Future regret happens usually when a loss is made from an investment. The difference in total wealth determines if there is future regret or not. In simple words, it could be said that future regret leads to higher-risk aversion.

- Peer effect

In financial behavior to understand peer effects and how do they change our financial behavior is important, we spend a lot of time with our friends and indifferent groups where information keeps

flowing. It has been an important focal point in empirical literature for a while. Information received from a peer is treated as a valuable thing and influences financial decisions. The area in the influence of peer effect on the other hand is large and sometimes hard to determine. When it comes to saving people tend to discuss financial topics with their peers, it can be argued that peer effects influence financial market participation (Nguyen and Nguyen, 2020). Peer effect in a social group is high, Bernheim (1994) stated that people rather tend to copy their peer's savings behavior from the same group, than making own savings plans.

Brown et al. (2008), found out that in communities where there are more stock investors and the general atmosphere in the community is that you can seek advice, influences on a higher likelihood to participate in the stock market. It is argued that an investor who is socially interacted with a group and the peers are participating in the stock market, this individual has a higher likelihood of participating himself also and the peer effect lowers participation costs (Hong et al., 2001).

1.2. Awareness and family effects

To understand the big picture of why an individual participates in the stock market, it is important to understand the different variations of awareness. Former literature shows that information barriers, transactions, and information costs have been a focal point in recent studies (Guiso and Jappelli, 2005). As previously studied, lack of awareness can describe that the participant does not understand or know different assets which are available to him or her, according to Merton (1987). Individual who is aware of stock as an asset is more likely to own stocks and have a more diversified portfolio compared to an individual who is not aware of stocks (Guiso and Jappelli, 2005). Awareness can be learned through different types of social interaction, friends, family, and peers in general. Awareness and social interaction have a link together, through interaction social learning happens. Guiso and Jappelli (2005), argued that awareness has a positive correlation between socio-economic determinants like wealth, age, education. Younger individuals are more aware than older. If all investors would be aware, other assets like mutual funds could see an increase by double (Guiso and Jappelli, 2005). Gumbo and Sandada (2018) found in Zimbabwe, that awareness has a positive influence on stock market participation, also that the effect of awareness does not change regarding background education.

Calvet et al. (2007), stated that households who are more financially sophisticated tend to invest in riskier assets. According to Calvet et al. (2009), financial sophistication in households is influenced positively by wealth and education, also bigger financial sophistication means fewer investment mistakes, these determinants are also correlated to awareness. Households who are more uneducated and have lower income choose not to have riskier assets in their portfolio. Lower investment skills have been found in groups like unemployed and retired (Calvet et al., 2009). Households with a higher level of financial sophistication have better investment skills and due to this have a higher likelihood of investing in riskier assets. These statements are consistent with the view that households are aware of their investment skills and choose their investments according to that (Calvet et al., 2007).

Social interaction and information shared influence a lot of individuals' financial behavior and decisions (Van Rooij et al., 2011). Information is shared via different channels e.g., colleagues, peers, and family. The information forwarded inside a family is treated with great trust, because the assumption is that you trust already your family members and you do not have to gain trust towards them anymore, comparing to new peers with you might be uncertain in the beginning, according to, (Fukuyama, 1995). Family effects in literature are understudied. According to Li (2014), which studied information sharing in a family, found out that a family member who has invested in the stock market in the previous five years increases the likelihood of 20 to 30 percent participating in the next five or six years. Li (2014), study suggests that parents who share information inside the family about investment knowledge and experiences can influence non-participants to participate. Hellström et al., (2013), continued where, Li (2014) left, they found out in their study that the portfolio performance of the family member in the previous measured period influences the other family's decision to participate. Individuals' financial decisions are influenced by trust in information that is received from social interaction (Hellström et al., 2013). Trust may strengthen or weaken depending on the financial decision the individual makes (Hellström et al., 2013). Van Rooij et al (2011), mentioned also that lower literacy individuals tend to rely more on financial information shared in the family compared to information received from financial advisers.

Previous literature has shed light on choices inside the family, both parents should have the same opinion on which asset is going to be invested, then we can call it a family choice. If parents have different portfolio choices, it can be called individual portfolio choices (Chiteji and Stafford, 2000). In this same study, they found that parental asset-ownership influences the asset-ownership

of the children (Chiteji and Stafford, 2000). Hong et al. (2001) found out, that increase in household education decreases fixed entry costs because of increased risk-reward knowledge and information on how does the market work.

Table 1.2.1 Summary of previously studied determinants

Determinant	**Impact**	**Prior research**
Gender	Positive for males	Almenberg and Dreber (2012) Van Rooij et al. (2011)
Age	Mixed	Bogan (2006) Gardini and Magi (2007)
Education	Positive	Yoong (2010) Hong et al. (2001)
Financial literacy	Postive	Van Rooij et al. (2011) Kadoya et al. (2017)
Wealth	Positive	Van Rooij et al. (2011) Bertaut (1998)
Trust	Positive	Guiso et al. (2005) Georgarakos et al. (2009)
Overconfidence	Positive	Laakso (2010) Grinblatt and Keloharju (2006)
Risk aversion	Mixed	Van Rooij et al. (2011) Haliassos and Bertaut (1995)
Peer effect	Positive	Brown et al. (2008) Hong et al. (2001)
Awareness	Positive	Guiso and Jappelli (2005) Calvet et al. (2007)
Family effect	Positive	Li (2014) Hong et al. (2001)

1.3. Hypotheses development

The first hypotheses of the study are to find out if there is an influence with awareness on own investment skills and asset selection. Awareness, in general, is linked to financial literacy, wealth, and education. All these three determinants are closely associated with financial sophistication. Previous studies show us how higher financial literacy is correlated with higher stock market participation. In previous studies, it has been stated that unemployed and retired individuals are less skilled in investing and tend to choose less risky assets, according to Calvet et al. (2009), due to the absence of financial sophistication. Unemployed and retired are seen as less skilled, because of their socio-economic determinants being weaker and financial literacy in general. Individuals who are more skilled and financially sophisticated tend to choose riskier assets and head for a bigger equity premium (Calvet et al., 2009). All findings made by Calvet et al. (2007, 2009), are in line with the view that if an individual is aware of their investment skills the asset choice is made regarding that. We can argue that individuals who are more aware of their investment skills have a higher likelihood of choosing riskier assets in their portfolios.

The second hypothesis is seeking to find out influences in family effects. Specifically, see that how does parents' education influences the stock market participation of the children. It has been studied that information shared inside a household is treated with greater trust and information shared is more honest. Parent's influence has been examined previously; parents who invest in stocks influence their children to invest in stocks in the next 5 years (Li, 2014). Also, higher education in households decreases fixed-entry costs for participation, which influences positively participation (Hong et al., 2001).
Based on previous studies, financial literacy is influenced by family effects. As Li (2014), stated that parents who share information in the family about investment knowledge and experiences can influence non-participants family members to participate. Parents with higher education have a higher likelihood of investing in stocks, which should influence children's participation because of the positive correlation in asset-ownership between parents and children (Chiteji and Stafford, 2000).

Knowing previously this, the second hypothesis is influenced by family effects and in detail by parents' education level. We can argue that parents who possess a higher degree in education have a higher influence on the children to participate in the stock market. For hypotheses, we determined a master's degree as a high education level and used it in our hypothesis. The first hypotheses

about awareness on own investment skills as a determinant for participation have not been studied previously, second hypotheses about the straight effect on parental education on children participation have not been also studied yet.

The main hypotheses for this study are:

- Individuals who are more aware of their investment skills have a higher likelihood of participating in the stock market.
- A parent who has a master's degree has a positive influence on the children to participate in the stock market.

2. DATA AND METHODOLOGY

2.1. Data

This thesis used empirical data which was collected through a non-representative survey of individuals. The survey consisted of 21 questions and can be divided into four parts looking at the nature of variables. The first part covers previously studied socio-economic determinants including age, gender, education, income, including family education level. The second part had the question for the dependent variable (stock market participation), besides not only asking about stock market participation there was a question about other possible investments and financial instruments. The second part includes also questions relating to financial literacy. The third part consisted of preferences and attitudes, risk aversion, trust, and overconfidence. The last part focused mostly on social interaction variables and hypotheses variables. Awareness and family effects were emphasized.

Non-probability sampling was the convenient choice for this study and data collection in general because we did not want to categorize respondents. Individuals who are non-participants or participants in the stock market were both accepted and treated as valuable. No age criteria for this sampling were, although most investing activities can be performed legally when you are at least 18 years old. The survey was distributed via different mainstream social media channels, LinkedIn, Facebook, and WhatsApp. Facebook aimed to reach a bigger number of individuals and more elder persons participate in the survey, with the distribution help from other people. LinkedIn is seen as a more sophisticated platform than Facebook, LinkedIn individuals are interested in work- and business-related subjects, in general, a little variation for the survey was searched. Through WhatsApp, the survey was distributed via friends and family. There were no restrictions to participate in the survey unless you were not a member of these three previously mentioned channels.

The survey was collected in a couple of weeks 224 responses. Respondents were all from Finland or Estonia.

2.2. Structure of the survey

The structure of the survey is extremely important, especially when doing non-probability sampling because not all are familiar with investing. The survey must be understandable and quick to make without losing interest. In the process of making the survey, it is important to understand to make the questions simple so the data collected would be correct and reliable. The survey was made to last from 5 to 10 minutes.

Like previously stated the survey was divided into 4 main sections. The first section dealt with socio-economic characteristics, measuring age, gender, education, parent's education, and income. In this study, wealth is measured by income levels. Each of these different variables had one question. With these socio-economic determinants, we could find out the individual's current situation in life. Parent's education was added to the first section because it was convenient to ask this after individuals' education was asked.

The second part dealt with the participation in the stock market, which was asked simply "Do you invest in stocks?". The second question was related to different asset investments, there were given different options from Mutual funds to Cryptocurrencies, in this question the respondent had more than one choice. Financial literacy was asked by three different questions, the respondent was asked to evaluate their knowledge in the field of economics, finance and investing. Every question had a similar answer option, which was asked on a scale of 1 to 10. 1 (No knowledge) and 10 (Top knowledge). Altogether the second section consisted of 5 different questions.

The third part embodied six questions. The first question was about risk-taking, the respondents were asked how much they would be willing to take risks while making an investment, answer option was given on a scale from 1 (Not willing) to 10 (Willing to take substantial risks). The second questions were to measure trust, the respondents were asked about their level of trust towards investment banks with a scale of 1 (Do not trust at all) to 10 (I have full trust). The next four questions dealt with overconfidence. The first overconfidence question asked the respondents to compare their investment performance with other acquaintances. Next question was to compare

their productivity level in school/work compared to their colleague. The third one asked the respondents to compare their social skills with people they are acquainted with. The last and fourth question of overconfidence asked the respondents to compare their problem-solving skills with people they are acquainted with. All four overconfidence questions were asked on a scale of 1 (Not aware at all) to 10 (Extremely aware).

The fourth section is headed to the hypotheses questions and social effects in general. In the first question, we asked the respondents to answer how aware they are of their investment skills on a scale of were 1 (Not aware at all) to 10 (Extremely aware). The second question asked if the respondents' friends invest in stocks or not. The third question is similar but instead of friends, we asked if the respondents' family members invest in the stock market. If a respondent's family member did invest in the stock market, then a follow-up question was asked that who is the family member who invests in stocks. There were given opportunities to choose more than one in this question. The opportunities were mom, dad, brother, sister, and relative outside the nuclear family. The last question in this section and the whole survey asked the respondents to choose the biggest influencer for participating or possible future participation in the stock market. The options were family, friends, or school.

2.3. Descriptive statistics

The detailed table of descriptive statistics can be found in Appendix 1 and variables specifically explained in Appendix 2.

2.3.1. Stock market participation and hypotheses variables

The survey collected 224 responses. 74% of respondents invested only in stocks, equalling the amount of 165. Other possible investments were also asked in the survey, question gained a lot of interest. Answers regarding other investments divided like this mutual funds (45%), ETF:s (35%), bonds (9%), crowdfunding (1.8%), cryptocurrencies (20%) and real estate (14%). As we can see mutual funds were the second most popular investment in the survey. Stock market participation is treated as our dependent variable (participation) in this study. Variable is binary from 0 to 1. Value 1 (invests in stocks) and 0 (does not invest in stocks).

Awareness in own investment skills got a mean score of 6.86 out of 10, which means that respondents felt they had a better awareness level on their investment skills than on average. Variables (fam_participation) and (parents_edu1, parents_edu2, parents_edu3) were created to examine the family effects' influence concerning stock market participation. Family participation (fam_participation) is a dummy variable with values of 1 (participation) and 0 (no participation). Family participation got a mean value of 0.64 and a median of 1, indicating that most of our respondent's family members invest in the stock market. A follow-up question for family participation aimed to find out which family member influenced most to stock market participation. Dummy variables were created for each answer category. Respondents whose family members did not invest in stocks were treated as 0 (no participation) inside the dummy variable. Dad received the highest mean score of 0.43 out of all respondents. These results were not involved in the regression analysis, for detailed statistics descriptive statistics (see Appendix 1) will provide them.

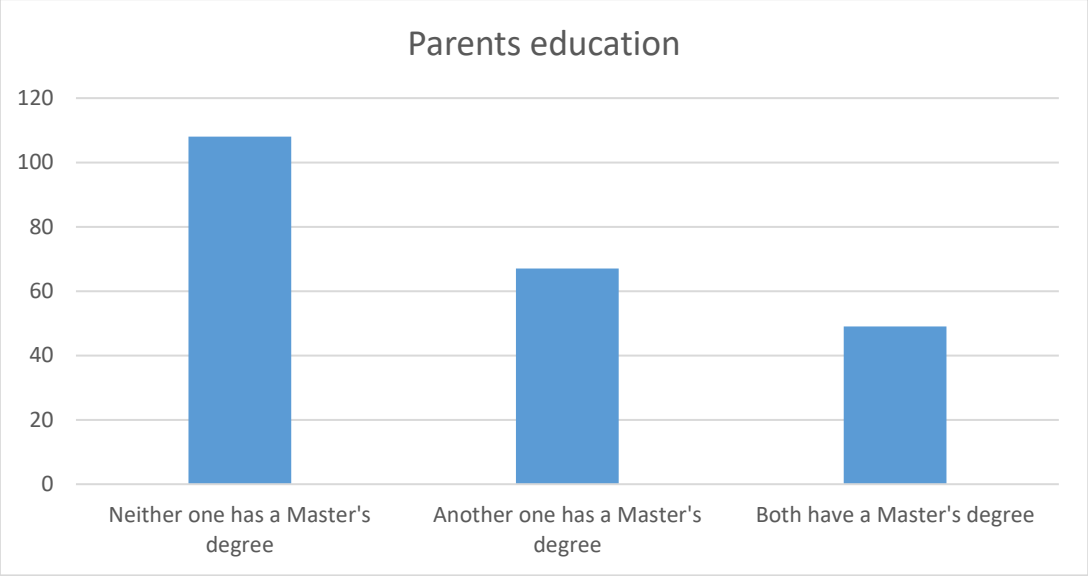

Figure 1. Parents education
Source: Koivunen (2021), author's survey

All three parents' education variables were coded also as dummy variables. Neither of the parents has a master's degree (parents_edu1), another parent has a master's degree (parents_edu2) and both parents have a master's degree (parents_edu3). Neither parent has a master's degree got a mean score of 0.48. Another one having a master's degree scored 0.3 and both parents with a master's degree resulted with a mean of 0.22. This indicates that nearly half of our respondent's parents do not have a master's degree (see Figure 1). As we were interested in parents who have a

master's degree, we left a dummy variable (parents_edu1) as a reference category in the logit regression. For additional regressions, a new dummy independent variable (par _mas) was created. Implying that if one parent in the family has a master's degree the binary variable has a score of 1.

2.3.2. Socio-demographic variables

The majority of our respondents were males (67%), which implies that our data is not gender-balanced in a perfect way. For gender, a binary variable was created, males are 1 and females 0 when doing regression analysis.

The age of the sample is young. The median of the sample is 24 years old, and the mean is 26.46, the oldest respondent was 57 years old, and the youngest aged 19. For education, the most popular category was bachelor's degree or corresponding (see Figure 2). For three different education levels, a dummy variable was created. High school graduate/corresponding or lower (edu_high), Bachelor's degree or corresponding (edu_bac), and master's degree or higher (edu_mas). Bachelor and master's dummy variable was added to logistic regression, since we were interested in more educated individuals, variable (edu_high) was left as our reference category in logit regression analysis.

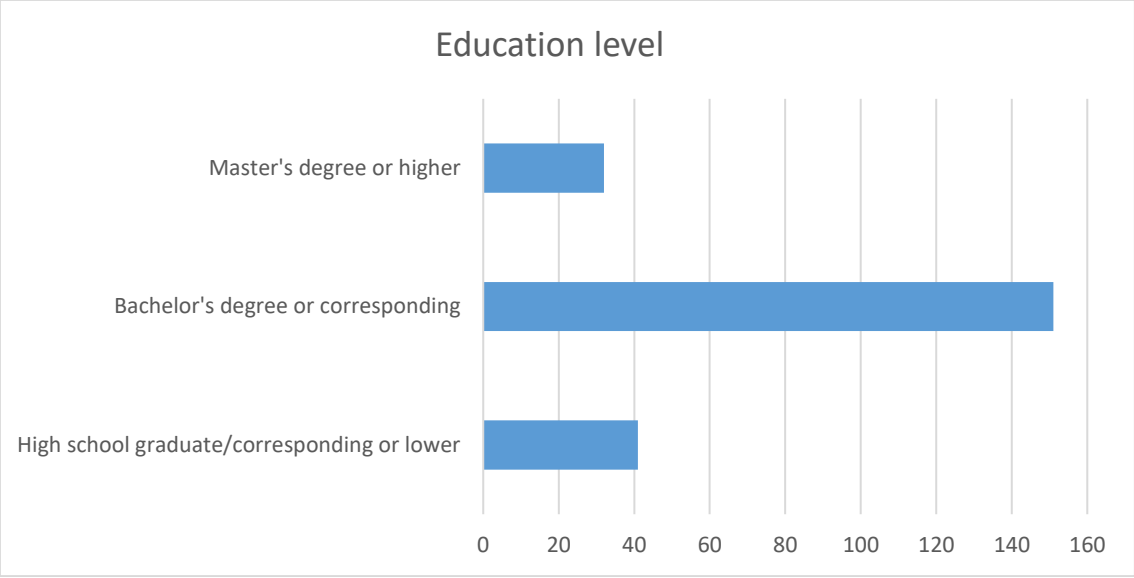

Figure 2. Education level
Source: Koivunen (2021), author's survey

Yearly net income was measured with 7 seven different categories. The majority of respondents answered that their yearly net income is 10 000€ - 25 000€ (see Figure 3). Following categories in order, below 10 000€, 25 000€ - 50 000€, 100 000€ - 150 000€, 50 000€ - 100 000€ and least favorite was over 150 000€. For logistic regression dummy variables for each category were created (income_1) is below 10 000€ and vice versa (income_6) is the biggest income category over 150 000€.

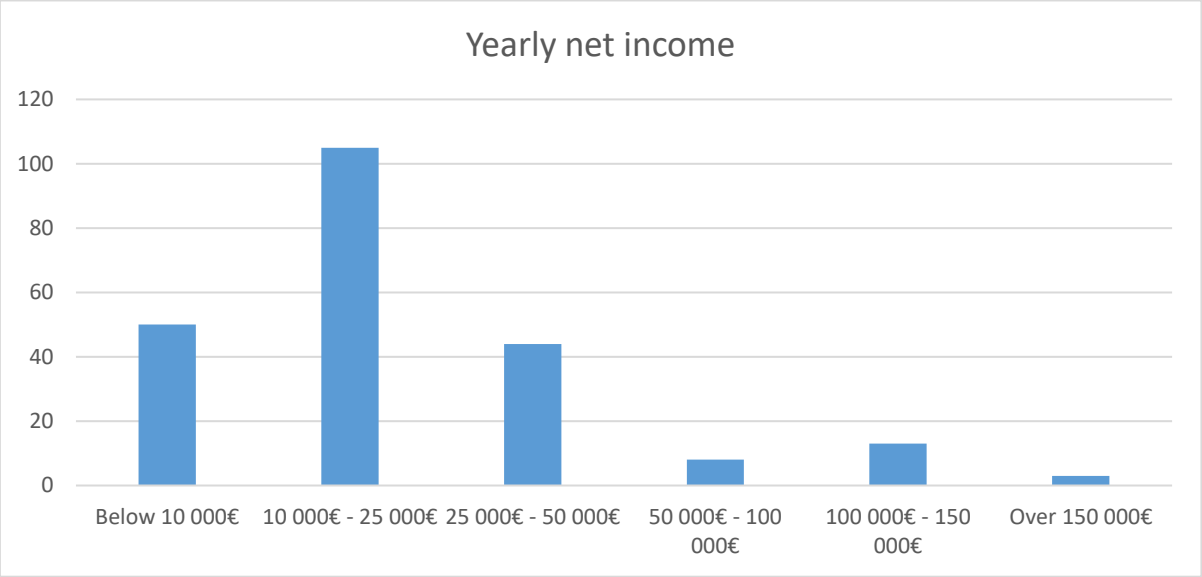

Figure 3. Yearly net income
Source: Koivunen (2021), author's survey

Due to low sample sizes in upper-income categories, we coded only three different categories for logit regression. Dummy variables (income_3), (income_4), (income_5), (income_6) were all combined into one dummy variable, in regression it is named as (income_3). The lowest income category (income_1) was left as a reference category in regression. These new variables for logit regression allow us to determine if individuals with a yearly net income over 25 000€ have a higher influence than lower categories.

2.3.3. Attitudes and preferences

For knowledge in general of economics, investing, finance, three questions were asked from the respondents. In the field of finance and economics in general the most amount of answers got to number 8 on a scale of 1 (No knowledge) to 10 (Top knowledge), when it came to investment

knowledge the most popular answer was number 7. From all these questions we calculated averages to form one independent variable for regression (finlit). The mean of this new variable was 6.8 and median 7, the results give us information that most of the respondents have a good level of financial literacy.

Overconfidence was treated in the same way as financial literacy, to measure overconfidence levels we had 4 questions. When asked to compare their social skills, problem-solving, and productivity level to others, most often respondents answered 8 on a scale of 1 to 10. On the other hand, when we asked about investment performance compared to others most respondents answered in between 5-7. The same strategy was applied to overconfidence than in financial literacy, so we took the average of all four questions and formed one independent variable for regression (overconfidence). This independent variable achieved a mean score of 7.16 and a median of 7, which means people see their capabilities better than others in general.

Determining the level of willingness to take risks we have variable (risk). Risk had one question in the survey. The mean for willingness to take risk was 6.77 and median 7. Trust is like the risk variable, having only one question in the survey. Trust variables mean value is 6.54 and median of 7, fairly similar results comparing to risk variable. For regression we have variable (trust). Peer effects are also added to the regression variable (peereffect), with a mean of 0.94 and median of 1, stating that about 94% of our respondents' friends invested in the stock market. The last variable we built for the regression was influenced to participation or future participation in the stock market, which was our last question in the survey. 102 respondents said that friends are the biggest influencer for participation, 68 said school and 54 answered family. Three dummy variables were created (influ_family), (influ_school), (influ_friends) one for each category. After creation, we decided to drop influence variables out of the regression, due to weak explanatory power to the dependent variable.

2.4. Methodology

Quantitative research methods are used to analyze the data received from the survey. Cross-sectional regression allows us to see what kind of impact our independent variables have on stock market participation. Independent variables include hypothesis questions and with regression, we can test the hypotheses of this thesis. The dependent variable is stock market participation, which

is binary, this why the best model, in this case, is to run the logit binary model. There are 18 independent variables gender, age, income, education, financial literacy, overconfidence, trust, risk, peer effect, family participation, awareness, and parents' education. The software we used for regression was Gretl. Three levels of significance are used in this study 1%, 5%, and 10%, meaning that if the p-value of the independent variable is lower than one of these three values it means that the independent variable is statistically significant.

3. EMPIRICAL RESULTS

3.1. Results in regression

In this thesis we created 6 models in our main analysis regression. The dependent variable is stock market participation (participation). The idea for 6 models was to add gradually more independent variables in each model. The first three models represent socio-economic variables, after these risks, knowledge, preferences, in general, are added to upcoming models. Parent's education and awareness are the hypotheses independent variables which are added in the last two models. The regression is done by a sample size of 224.

Age is a level variable which means that a higher age will increase the age variable. For income, education, influence for stock market participation, and parent's education dummy variables were created for each answer category we had in the questionnaire. As mentioned in the last chapter, most of the upper-income categories were formed into one dummy variable (over 25 000€), due to lack of variation inside the upper-income dummy variables. The lowest income level was left as our reference category, so we could analyze if there is a difference between earning less or more than 25 000€ on stock market participation. In education, we left out high school or corresponding as our reference category and focused on individuals who are in university or graduated as masters. Also, regarding personal influence on participation was narrowed down to school and family and added these two dummy variables to the regression in a practice run, leading to no significance, and only weakening our explanatory power of the model, we decided to leave influence variables out of the regression. Concerning our second hypothesis about parents' education, we wanted to know does a higher education level on parents has a positive influence on stock market participation, due to this both parents with no master's education dummy variable was left as our reference category and not added to regression analysis.

In the table first column represents the odds ratio and the column on the right next to it is the standard error (see Table 3.1.1). Significance is marked with stars, *** is 1% significance, ** is

5% significance and * is 10% significance. The stars are marked next to the standard error if significance is found in that specific independent variable. Adjusted R2 at the very bottom of the table implies the strength of the model tested. In simple words, it represents the explanatory power of the independent variables to the dependant variable. The lowest score we reached in Model 1, meaning that this is our weakest model in this regression. Highest score we received in Model 5, which implies that this is our strongest model in this regression.

In model 1 we added gender and age as variables. Age did not receive any kind of significance for stock market participation. Previously studied that younger persons are more likely to invest in stocks Guiso and Jappelli (2005), but in this model, we do not see any positive influence. Gender on the other hand received 1% significance, implying that men are more like to invest in the stock market. This finding backs up previous findings that men are more likely to participate in the stock market, according to Van Rooij et al. (2011).

To model 2 only independent variable added was income, two dummy variables were introduced. Gender maintains the highest significance level after adding income. Income variables did bring 5% significance to stock market participation, meaning that individuals who earn 10 000€ - 25 000€ or over 25 000€ have statistical significance for stock market participation in this sample. Adjusted R2 value got higher from the first model to 4.4%, which implies strengthened explanatory power towards the dependant variable.

Model 3 continues still with socio-economic variables. Education was added with two dummy variables. After additions gender has still the highest significance level. Like previously mentioned, this thesis was interested to find influence in university students or previously graduated master's students or higher. Bachelor and master's education are significant on stock market participation, bachelor education receives a 10% significance, while master's education receives a significance of 5%. In previous studies higher education has had a positive influence on participation, this model backs up previous studies, Yoong (2010). Both income variables stay on a 5% significance when income is added. Adjusted R2 is nearly the same as in Model 2 but having a slight increase to 5.1%.

In our fourth model, we add four independent variables. Knowledge, overconfidence, trust, and risk. Knowledge has a 5% significance, which explains previous literature that financial literacy influences positively stock market participation, like previously stated (Van Rooij et al., 2011).

Risk is statistically significant with a level of 1%, explaining higher willingness to take risks is correlated with stock market participation. After the addition of these 4 variables, we can see that education, income, and gender variables lose their significance. Previously studied that when risk aversion increases stockholding decreases, Van Roiij et al. (2011), our study agrees with this finding. Adjusted R2 increases to 14.3%, this increase is positive, and the model gets stronger after knowledge and preference variable inclusions.

In model 5 we add our first hypothesis variable awareness and especially awareness in own investment skills. Awareness is 1% significant, meaning that people who are more aware of their investment skills are more likely to select riskier assets like stocks, Calvet et al. (2007). Financial literacy loses its significance in this model. Risk fluctuates from 1% significance to 5%. Adjusted R2 continuously increasing, now 16.6%, even though we lose significance. Family stock market participation did not have any statistical significance, even though a previously conducted study implies on positive influence (Li, 2014).

The sixth model has every independent variable we wanted to test in regression. In addition for Model 5, two dummy variables for parents' education, either another parent has a master's degree or both parents have a master's degree. No statistical significance was found in the level of parent's education. Previously studied that increase in household education increases participation, Hong et al. (2001), is not true in this study. Awareness maintains a significance of 1% and risk 5%. Adjusted R2 decreases to 15.2%, meaning that the explanatory power of the model decreases due to the addition of parent's education.

Table 3.1.1 Main analysis regression results

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Variable	**Odds**	**St. Err**	**Odds**	**St. Err**	**Odds**	**St. Err**	**Odds**	**St. Err**	**Odds**	**St. Err**	**Odds**	**St. Err**
Gender	3.223	(0.318) ***	2.643	(0.330) ***	2.676	(0.341) ***	1.760	(0.396)	1.641	(0.417)	1.583	(0.424)
Age	1.004	(0.020)	0.981	(0.024)	0.974	(0.025)	0.970	(0.027)	0.971	(0.027)	0.975	(0.029)
Income_2			2.299	(0.379) **	2.213	(0.386) **	1.615	(0.429)	1.420	(0.463)	1.394	(0.466)
Income_3			3.510	(0.512) **	3.411	(0.532) **	1.853	(0.600)	1.873	(0.635)	1.848	(0.637)
education_bac					2.159	(0.404) *	0.911	(0.481)	1.067	(0.503)	1.075	(0.504)
education_mas					3.790	(0.631) **	1.089	(0.736)	1.308	(0.781)	0.772	(0.787)
Finlit							1.386	(0.130) **	1.242	(0.146)	1.228	(0.148)
Overconfidence							1.037	(0.206)	0.931	(0.225)	0.938	(0.225)
Trust							1.063	(0.101)	1.009	(0.106)	1.015	(0.107)
Risk							1.453	(0.106) ***	1.317	(0.115) **	1.324	(0.116) **
Peer effect									2.868	(0.776)	2.886	(0.787)
Fam_participation									1.744	(0.382)	1.730	(0.393)
Awareness									1.357	(0.115) ***	1.359	(0.116) ***
Par_edu2											1.307	(0.470)
Par_edu3											1.050	(0.533)
N	224		224		224		224		224		224	
Adj. R2	3.1%		4.4%		5.1%		14.3%		16.6%		15.2%	

Note: *p < 0.1; **p < 0.05; ***p < 0.01, dependent variable is participation

3.2. Additional regressions

In the section of additional regressions we tested three different models, Model 7 is the same as Model 6 in main regression analysis but tested with a probit model to see what the maximum likelihood for participation is and see if our hypotheses independent variable awareness stays significant and is there changes in other independent variables. The eight and ninth model are done with normal logit binary regression. For model 8 we approached with an idea to test a financially sophisticated individual where we added the highest education and highest income level, including age, gender, and awareness. Model 9 tested if we could find still a significance for parents' education to stock market participation, (par edu_2) and (par_edu3) were formed into as one dummy variable (par_mas). The new variable implicates that there is at least one parent in the family who has a master's degree. The first model shows the coefficient on the left and standard error on the right, the next models are displayed as previous models tested in this thesis. Model below tests the robustness of our results (see Table 3.2.1)

Model 7 does not show any big changes from the main regression analysis when we tested model 6 with all independent variables. Awareness remains significant at a 1% level and risk at a level of 5%. Adjusted R2 is the same as in the main regression analysis model 6.

Model 8 is done with regular binary logit regression, variables are chosen on a basis of financially sophisticated individuals. Resulting awareness in own investment skills is 1% significant and financial literacy has a significance of 5%. For these additions gender has a 10% significance, meaning that when tested with these variables financial literacy becomes a more important predictor to stock market participation. Also, gender is significant which implies that when adding higher income and financial literacy, males have a higher likelihood to participate. Strongest predictor in this model is awareness on own investment skills. Adjusted R2 gets stronger when dropping out other variables, it is 17.5%.

Model 8 is the strongest model tested so far in this thesis. Model 9 aims to seek one more time if we get significance for parents' education, with a new variable (par_mas) created. Results show us that having a parent who has a master's degree does not act as a predictor for stock market participation. On the other hand, family stock market participation is statistically significant 5%, with gender at 1% significance.

Table 3.2.1 Additional regression results

	Model 7			Model 8			Model 9		
Variable	**Coef.**	**St. Err**		**Odds**	**St. Err**		**Odds**	**St. Err**	
Gender	0.253	(0.245)		2.071	(0.376)	*	3.443	(0.328)	***
Age	-0.013	(0.016)		0.963	(0.026)		1.002	(0.022)	
Income_2	0.169	(0.272)							
Income_3	0.339	(0.364)		1.560	(0.496)				
education_bac	0.089	(0.290)							
education_mas	0.151	(0.440)		1.588	(0.663)				
Finlit	0.121	(0.082)		1.356	(0.123)	**			
Overconfidence	-0.008	(0.125)							
Trust	-0.003	(0.061)							
Risk	0.170	(0.067)	**						
Peer effect	0.608	(0.453)							
Fam_participation	0.305	(0.225)					2.170	(0.332)	**
Awareness	0.171	(0.066)	***	1.523	(0.104)	***			
Par_edu2	0.146	(0.261)							
Par_edu3	0.049	(0.304)							
Par_mas							0.748	(0.351)	
N	224			224			224		
Adj. R2	15.2%			17.5%			3.7%		

Note: *p < 0.1; **p < 0.05; ***p < 0.01, dependent variable is participation

Family participation supports previous studies that have found that investing family members influence other non-participant family members to invest in stocks (Li, 2014). Adjusted R2 in Model 9 is 3.7%, which implies that the model is much weaker than the previous two tested in robustness.

3.3. Discussion

This section will discuss more specifically the hypotheses tested in this study and compare our findings to previous studies. Also, we will cover limitations concerning this study and give suggestions for future research.

The decision to run model 6 again in the robustness test as Model 7 gave us the confidence that this model is reliable. The results show us that awareness as our significant variable can be trusted. In previous studies, age has had a mixed influence on participation. Our results support, Gardini and Magi (2007), that age did not have any significance for participation, this can be possibly caused by the sample. In our sample the majority of respondents were young, so changes in age levels were missing. Gender had a significance, previously founded that men are more likely to participate, according to Almenberg and Dreber (2012), our results support this. After taking preference and attitudes to regression the gender effect disappeared, implying that risk and financial literacy as variables could had a larger impact on the dependent variable, and the added variables weakened the gender effect towards participation. Males and higher risk-taking are positively correlated (see Appendix 3). From the results of the survey, we could immediately see that gender is imbalanced and 151 of 242 respondents were male.

In previous studies, higher wealth and income levels have influenced positive stock market participation. Laakso (2012), stated that higher wealth gives a better opportunity to manage participation costs in the stock market. In our main regression analysis from model 1 to model 3, we received significance for income classes, over 25 000€ and 10 000€ - 25 000€. The reference category was below 10 000€, the correlation between participation and for the variable (income_3), was the highest. Significance in both income dummy variables which were tested in the regression gave us a mixed feeling about previous literature of the findings of higher income leads to higher participation (Van Rooij et al., 2011), in our case, it was irrelevant of earning less or over 25 000€. 105 respondents from 224 told that their yearly net income is 10 000€ - 25 000€,

already at that point, we could anticipate a lack of variation inside higher-income dummy variables. This is the reason why we had to condense dummy variables into three different categories. First practice regressions were done with, over 50 000€ being our highest category, due to very high odds ratio and coefficient value we decided to squeeze the categories even more. When adding more variables to the model our significance in income vanished.
Grinblatt and Keloharju (2006), stated that higher overconfidence levels increase stockholding, in our analysis, we didn't see overconfidence having any significance. Higher trust towards financial internediaries is seen as a positive influence for stock market participation according to Georgarakos and Pasini (2009), our study does not support this. Surprisingly peer effects did not also show us any significance even though according to Bernheim (1994), individuals tend to copy their peer's savings plans. In our study, 94% of respondent's peers invested in direct stocks.

The first hypotheses sought to find if individuals who are more aware of their investment skills have a higher likelihood of participating in the stock market. Individuals who are aware of their investment skills tend to choose riskier assets, according to Calvet et al. (2007). Awareness variable was introduced in model 5 in the main regression analysis, straight away it had a 1% significance. In the last model of the main analysis, we added two parents' education dummy variables and still, 1% significance was maintained in awareness. Also, the awareness variable is positively correlated with education, knowledge, and wealth, which is the determination for financially sophisticated individuals. In our correlation matrix (see Appendix 3) we can see that awareness has a positive correlation with all these variables. Awareness was tested again in an additional logit regression, with only variables which represent a financially sophisticated individual, we added the highest income category (income_3), the highest education level (edu_mas), knowledge and age, and gender. The reason we did this was to see that if awareness remained significant when we added variables that have been previously studied to influence positively stock market participation. Awareness remained 1% significant and financial literacy had 5% significance and didn't weak due to addition of these variables. From our results, we can conclude that awareness of own investment skills is a strong predictor for stock market participation.

The second hypothesis is that a parent who has a master's degree has a positive influence on the children to participate in the stock market. The reason to test this hypothesis was obvious, parents share a lot of information with their children throughout the children's childhood and young adulthood, so finding out if there is an influence is important. Higher education is correlated with higher financial literacy, higher financial literacy on the other hand increases higher stock market

participation. If all this is reliable, then the children should possess high financial literacy compared to other individuals whose parents are not master students. When we added variables (par_edu2) and (par_edu3), these dummy variables did not receive any type of significance. After the main analysis regression, we decided to add a new dummy variable (par_mas), meaning that at least one parent in the family has a master's degree. This variable either did not receive any type of significance when involving gender, age, and family participation in model 9 of additional regression. Variable (par_edu2) had a positive correlation with stock market participation, but (par_edu3) had a negative correlation. We can say that a parent who has a master's degree in the family is not the root cause to the children starting investing in stocks. Family participation on the other hand was 5% significant in model 9 and stronger predictor.

Limitations from this research come from a cross-sectional study. In a cross-sectional study exposures and outcomes are measured at one point in time. This makes it hard for us to investigate the causal relationship between exposure and outcome. Dropping out time series in this study restricts our selection of variables and due to this we can't analyze the changes in individuals financial behavior during a longer time span. Using surveys to collect data can bring us unexpected answers and imbalanced data. Also, what comes to reliability when collecting data with a survey can cause personal biases from the respondents.

Further suggestions are to study more precisely income levels and where is the break-even point for participation. Nowadays accessing the stock market is made easy and cheap, so does income play any more a big role in stock market participation, or do wealthier individuals participate because investment banks have better products for them and services in general. Also, a lot of this study's respondents invested in cryptocurrencies, for future studies we recommend analyzing different determinants which influence investing in cryptocurrencies. The knowledge about what types of individuals participate in the cryptocurrency market and what are the determinants which impact this, is important information for stock market participation literacy.

CONCLUSION

This thesis looked at different determinants which ínfluence stock market participation. Previously studied determinants were involved and discussed. Specifically it focused on predictors as, awareness in own investment skills and parents' educational background.

The study aimed to find out if individuals who are more aware of their investment skills invest more in stocks and through family effects we wanted to know that does higher parents' education influence children's stock market participation.

Research questions were answered. The main research questions for this study were:

1. Does being aware on own investment skills lead to higher stock market participation?
2. Does parents higher education lead to higher stock market participation?
3. Which other determinants influence the stock market participation and do they follow the same line as previous literature?

Two hypotheses were formed from aim and research questions:

The hypotheses for this study are:

1. Individuals who are more aware of their investment skills have a higher likelihood of participating in the stock market.
2. A parent who has a master's degree has a positive influence on the children to participate in the stock market.

We can conclude that previously found significant variables, were not all supported in this study. Risk, awareness, gender, financial literacy, education were found significant and supporting previous findings. Income on the other hand was controversial, because both income levels added to regression gave a significance level of 5%, meaning that it did not matter if the individual earned over 25 000€ or less. A higher income level did not lead to higher stock market participation.

Awareness was 1% significant when added all the independent variables and when tested with robust additional regressions. Even when controlling for highest education level and financial literacy, awareness was the strongest predictor. Parents' education did not receive any significance during main regression and additional robust regressions. Correlation between participation and parents' education was weak, meaning that it was irrelevant if at least one parent had a master's degree.

Looking at our results we can say that we failed to reject hypothesis 1, because higher awareness on own investment skills and stock market participation have a statistical significance. Hypothesis 2 is rejected.

The aim was to find out if awareness in own investment skills and parents having a master's degree have a positive influence on stock market participation. A solution was found to this and results obtained from this study give us a better understanding of individuals who have a higher likelihood of participating in the stock market. To understand that not only having high investment knowledge leads to stock market participation but being aware of your investment skills gives a higher likelihood for investing in stocks.

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APPENDICES

Appendix 1. Descriptive statistics

Variable	Mean	Median	S.D.	Min	Max
Participation	0.74	1	0.44	0	1
Gender	0.67	1	0.47	0	1
Age	26.46	24	8.03	19	57
High school graduate/corresponding or lower	0.18	0	0.39	0	1
Bachelor's degree or corresponding	0.67	1	0.47	0	1
Master's degree or higher	0.14		0.35	0	1
Dummy income					
Below 10 000€	0.22	0	0.42	0	1
10 000€ - 25 000€	0.47	0	0.50	0	1
25 000€ - 50 000€	0.20	0	0.40	0	1
50 000€ - 100 000€	0.04	0	0.19	0	1
100 000€ - 150 000€	0.06	0	0.23	0	1
Over 150 000€	0.01	0	0.12	0	1
Financial literacy	6.81	7	1.74	2	10
Risk	6.77	7	1.96	2	10
Trust	6.54	7	1.96	1	10
Overconfidence	7.16	7	1.00	1	10
Awareness	6.86	7	2.03	1	10
Peer effect	0.94	1	0.24	0	1
Family participation	0.64	1	0.48	0	1
Dummy family participation					
Mom	0.33	0	0.47	0	1
Dad	0.43	0	0.50	0	1
Brother	0.28	0	0.45	0	1
Sister	0.16	0	0.36	0	1
Relative outside nuclear family	0.20	0	0.40	0	1
Dummy parent's education					
Neither one has a master’s degree	0.48	0	0.50	0	1
Another one has a master’s degree	0.30	0	0.46	0	1
Both have a master’s degree	0.22	0	0.41	0	1
Dummy influence					
School	0.30	0	0.46	0	1
Family	0.24	0	0.43	0	1
Friends	0.46	0	0.50	0	1

Dummy assets					
Mutual fund	0.45	0	0.50	0	1
Etf:s	0.35	0	0.48	0	1
Bond	0.09	0	0.29	0	1
Crowdfunding	0.02	0	0.13	0	1
Cryptocurrencies	0.20	0	0.40	0	1
Real estate	0.14	0	0.35	0	1

Source: Koivunen (2021), author's calculations

Appendix 2. Definition of variables

Definition	Variable code	Levels
Do you invest in stocks?	Participation	Dummy variable. 0 - No; 1 - Yes.
Gender	Gender	Male/female/other/prefer not to say
Age	Age	Respondent types manually
Level of education?	Edu_high	High school graduate/corresponding or lower
	Edu_bac	Bachelor's degree or corresponding
	Edu_mas	Master's degree or higher
Parents' masters degree?	Par_edu1	Neither parent has a Master's degree
	Par_edu2	Another parent has a Master's degree
	Par_edu3	Both parents' a Master's degree
Yearly net income?	Income_1	Below 10 000€
	Income_2	10 000€ - 25 000€
	Income_3	25 000€ - 50 000€
	Income_4	50 000€ - 100 000€
	Income_5	100 000€ - 150 000€
	Income_6	Over 150 000€
Invest in any other assets?		Mutual funds, ETF:s, Bonds, Cryptocurrencies, real estate, crowdfunding, nowhere
Genral economics knowledge?	Finlit	Scale 1 (No knowledge) to 10 (Top knowledge)
Finance knowledge?	Finlit	Scale 1 (No knowledge) to 10 (Top knowledge)

Appendix 2. Definition of variables (continued)

Investment knowlede?	Finlit	Scale 1 (No knowledge) to 10 (Top knowledge)
Risk willingness?	Risk	Scale 1 (Not willing) to 10 (Willing to take substantial risks)
Trust in investment banks?	Trust	Scale 1 (Don't trust at all) to 10 (I have full trust)
Investment peformance compared to others?	Overconfidence	Scale 1 (Not as good as the average) to 10 (Better than the average)
Productivity level compared to colleagues?	Overconfidence	Scale 1 (Not as good as the average) to 10 (Better than the average)
Social skills compared to acquainted people?	Overconfidence	Scale 1 (Not as good as the average) to 10 (Better than the average)
Problem soving compared to acquainted people?	Overconfidence	Scale 1 (Not as good as the average) to 10 (Better than the average)
Awareness on own investment skills?	Awareness	Scale 1 (Not aware at all) to 10 (Extremely aware)
Do your friends invest in stocks?	Peereffect	Dummy variable. 0 - No; 1 - Yes
Do your family members invest in stocks?	Fam_participation	Dummy variable. 0 - No; 1 - Yes
Which family member invests in stocks?		Mom/Dad/Brother/Sister/Relative outside nuclear family
Biggest influencer for participation (or future)?	Influ_friends	Friends
	Influ_school	School
	Influ_family	Family

Source: Koivunen (2021), author's survey

Appendix 3. Correlation matrix

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Participation	1															
2. Gender	0.25	1														
3. Age	0.04	0.10	1													
4. Income_2	0.07	0.06	-0.27	1												
5. Income_3	0.14	0.18	0.50	-0.61	1											
6. Edu_bac	0.06	0.09	-0.30	0.25	-0.32	1										
7. Edu_mas	0.10	-0.04	0.39	-0.20	0.34	-0.59	1									
8. Finlit	0.38	0.27	0.24	0.01	0.20	0.08	0.32	1								
9. Overconfidence	0.19	0.06	-0.05	0.04	0.19	0.11	0.00	0.24	1							
10. Trust	0.17	-0.03	0.10	0.02	0.07	0.04	0.19	0.36	0.19	1						
11. Risk	0.42	0.26	0.14	0.01	0.23	0.04	0.18	0.47	0.24	0.26	1					
12. Peereffect	0.26	0.21	0.06	0.06	0.09	0.02	0.11	0.28	0.14	0.18	0.27	1				
13. Fam_participation	0.14	-0.01	-0.13	0.04	-0.02	-0.05	0.02	0.04	0.10	0.03	0.02	0.00	1			
14. Awareness	0.44	0.22	0.14	0.07	0.18	0.05	0.13	0.50	0.30	0.28	0.53	0.21	0.12	1		
15. Par_edu2	0.06	0.08	-0.22	0.13	-0.12	0.10	-0.07	0.04	-0.06	-0.08	-0.03	-0.03	0.05	-0.05	1	
16. Par_edu3	-0.08	0.00	-0.19	-0.09	-0.03	-0.07	0.03	-0.13	0.04	-0.11	-0.14	-0.04	0.20	-0.15	-0.35	1

Source: Koivunen (2021), author's calculations

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