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ENTREPRENEURSHIP AS A PREDICTOR OF STOCK MARKET PARTICIPATION

Bachelor's thesis
International Business Administration, Finance and Accounting

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I hereby declare that I have compiled the thesis independently
and all works, important standpoints and data by other authors
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The document length is 9077 words from the introduction to the end of conclusion.

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TABLE OF CONTENTS

ABSTRACT

This bachelor's thesis takes a look at different factors that affect the stock market. Specifically, if entrepreneurship is a predictor of participation in addition to other factors that were shown to matter by previous studies. Additionally, the study also takes a look at the different investing habits and tries to search for an answer to whether having higher financial literacy leads to higher stock market participation. This study uses cross-sectional logistic regression analysis and a number of different models to provide the results. The results will be investigated based on a theoretical contradiction and a survey (n=760).

Results suggest that the fact of being an entrepreneur leads to a lower likelihood of participating in the stock market. As also discovered before, the participation rate among men is much higher than among women and the participation tends to increase with age. The likelihood of participating in the stock market does not heavily increase with wealth and income levels. Having a university degree is fundamental, although the level of a degree is not and, what is more, the financial and mathematical majors were found to lead to a lower likelihood of participation. As predicted, higher financial literacy and willingness to take risks are essential in stock market participation.

Keywords: stock market participation, entrepreneurship, behavioral finance

INTRODUCTION

A popular stock market is one of the most volatile investment options. Not only are volatile assets easy and quick to convert into cash, but they also offer possibilities for huge financial gains. At the same time, stock prices might fall sharply and cause tremendous losses. The motivation for stock market participation has been a subject of study for over centuries, however, the impression of entrepreneurship is well understudied. Entrepreneurs are supposed to have specific personality traits such as self-efficiency, willingness to take risks, optimism, and confidence. The same traits correspond to investors. What is more, previous studies have suggested that there is a need for further research in financial literacy on subsequent financial behavior. As most of the studies of financial literacy and stock market participation have conducted over five years ago, there is also a need for more recent research.

This thesis takes a look at different factors that affect the stock market. Specifically, if entrepreneurship is a predictor of participation in addition to other factors that were shown to matter by previous studies. Therefore, the first aim of this study is to find out whether there is a significant link between entrepreneurship and stock market participation. To the best of my knowledge, this is the first study to examine the relationship between entrepreneurs and stock market participation. Additionally, the study also takes a look at the different investing habits and controls for the topicality of previous findings. Entrepreneurs are supposed to have higher knowledge in financial literature and can, therefore, make better investment decisions. Based on this, the second aim of this study is to find out whether higher financial literacy leads to higher stock market participation.

The main research questions for this study are:

1. Does being an entrepreneur lead to higher stock market participation?
2. Does higher financial literacy lead to higher stock market participation?
3. Which other factors affect the stock market participation and do they follow the same line as previous studies?

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

The hypotheses for this study are:

1. Being an entrepreneur increases the likelihood of stock market participation.
2. High financial literacy is associated with a greater likelihood of stock market participation

This study focuses on people with higher financial literacy and entrepreneurs. The results will be investigated based on a theoretical contradiction and a survey, which consists of four parts and 24 questions. The sample size is 760. The opportunity sampling method was being used when compiling the sample. This study uses cross-sectional logistic regression analysis and a number of different models to provide the results. To provide even more accurate results, a few additional models are run as a robustness test. Further connections between variables are studied using correlation. The dependent variable in the study is stock market participation. The independent variables differ from socio-economic variables such as age, gender, and income to behavioral variables, such as knowledge and basic traits or attitudes of an investor. What is more, there are additional variables of entrepreneurial fact and likelihood.

This thesis proceeds as follows. In the first section of the study, I will give an overview of the literature used as well as previous findings. Based on these, I will develop hypotheses and prepare to prove or disapprove them. In the second section, I will give an overview of the data, descriptive statistics, and the methodology. The final section includes empirical regression results, robustness tests, the final analysis, and the conclusion.

1. LITERATURE REVIEW

In this part of the thesis, I will review prior literature relevant to the stock market participation. The section is organized as follows. First I focus on the determinants of the stock market participation. The second part gives an overview of entrepreneurial literature. The final section combines together these two streams of literature in order to construct hypotheses.

1.1. Stock Market Participation

The basic idea behind investing in the stock market is to place money on stocks, which an investor believes to increase in value over some time. Each stock represents a small fraction of ownership of a certain company. The stocks can either be owned for a longer time or constantly traded. This makes the stock market much more volatile than other investing opportunities. Because of the high volatility, the stock market is one of the riskiest, but potentially profitable places to invest in. The stock market is open and available for participation to everyone.

Below I will shortly go over different determinants, which are found to be effective when measuring stock market participation.

- Age

Age is found to be an important aspect of stock market participation in many previous studies. For example, a study conducted by Van Rooij, Lusardi, and Alessie (2011) shows that people tend to participate more in the stock market as they get older. It also states that stock ownership is centered on middle-aged people. This is supported by Cole and Sharsty (2009), who found a considerable increase in stock market participation between the people aged from 35 to 55.

- Gender

Gender has been a point of interest for many researchers and object of study for over a decade. For instance, Van Rooij *et al* (2011) as well as Haliassos and Bertaut (1995) have found that stock market participation is much higher among men than women. Besides, Almenberg and Dreber (2012) suggest that basic gender differences in financial literacy knowledge can also explain the massive gender gap in general stockholding. On the other hand, in the study made by Halko, Kaustila, and Alanko (2012), the authors find that the gender gap disappears when investment knowledge, risk attitudes, and education are included. They also show that the difference changes direction and becomes significant when income and wealth variables are included (Halko *et al*., 2012, 67).

- Education

Kiyosaki and Lechter (1998) state in their book "Rich dad, poor dad" that a person's only true asset is their mind. It has brought to our attention that education and financial sophistication play a significant role in an extremely wide range of stock-related decisions (Christelis *et al*., 2011, 1929). Firstly, it has been proven that having a university degree increases stock market participation by almost 10 percentages (van Rooij *et al*., 2011, 16). This is also supported by stating that stockholding is extensively larger among those who have at least a college degree compared to those who only have less than a high school diploma (Haliassos, Bertaut 1995, 1112). Secondly, it is believed that intelligence test scores and educational duration are corresponding to each other. To support this, Grinblatt, Keloharju, and Linnainmaa (2011) show that in stock markets, investors with high-IQ are found to be participating because they face a remarkable risk-return trade-off. On the contrary, people who have low-IQ avoid participation because they make investment mistakes (Grinblatt *et al*., 2011, 2125). The same ideas get support from Vaarmets, Liivamägi, and Talpsepp (2019), who state that higher levels of intelligence and education lead to a higher likelihood of stock market participation. Additionally, they find that obtaining either a master's or doctoral degree only minimally affects the stock market participation (Vaarmets *et al*., 2019, 93)

- Educational specialization

The major of a person has not been a subject of study much. However, it has been found that financial literacy education does not affect investors' decision making (van Rooij *et al*., 2011, 17). This is supported by Cole and Shastry (2009) who state that education alone is not statistically compelling, nonetheless, stock market participation tends to increase with an additional year of

study. The findings from Mandell and Klein (2009) study are doubting the competence of taking a personal financial management course to considerably improving financial decision making in the future. They also suggest that further research is needed to determine even more relevant approaches to financial literacy education (Mandell, Klein 2009, 23).

- Financial literacy

"Financial literacy is even more valuable than money" (Kiyosaki, Lechter 1998, 114). Several findings make financial literacy a powerful determinant in studying stock market participation.

Starting with Ibrahim and Tayfun (2016), who state that financial literacy differs based on age, position, and different fields of study. Lusardi (2008), however, has classified financial literacy as either basic or advanced. Basic literacy is the minimum level of knowledge, which is required for all individuals, regardless of their background. It is the knowledge everyone needs in their everyday lives. It involves concerns such as numeracy, compound interest, inflation, the time value of money, and the money illusion. Stock markets, mutual funds, bonds, alternative types of securities, the interest rates effect, and the risk-return relationship issues belong to advanced financial literacy. Both of these literacies are also considered under the term of general financial literacy.

It has been found that both basic and self-assessed financial knowledge are important determinants of stock market participation. According to Van Rooij *et al* (2011), those who have low financial literacy have also a much lower likelihood of investing in the stock market. They have also found that advanced literacy knowledge is lower among the young and higher among middle-aged participants. Additionally, it is found that women display much lower levels of knowledge on both types of financial literacy than men (Almenberg, Dreber 2012, 7). What is more, advanced financial literacy is found to be correlating with risk preferences whereas basic financial literacy is not (Almenberg, Dreber 2012, 10). In addition to that, a study conducted by Guiso and Jappelli (2005) proved that a person's lack of financial knowledge helps to explain reduced participation in all financial markets.

- Wealth and financial satisfaction

Wealth and financial satisfaction are important determinants for several reasons. Firstly, stock market participation has found to heavily increase when both income and wealth levels increase (van Rooij *et al*., 2011, 15). Based on this, we can also assume that stock market participation is lower within households where the risk to become unemployed is bigger. Vissing-Jorgensen (2002) states in her study that there is clear evidence that positive nonfinancial income increases the likelihood of investing in stocks. This also affects the amount, which is being invested. However, the actual amount of financial wealth invested in stocks is found to not affect stock market participation.

- Decision making habits

Financial literacy is strongly connected with sources of financial advice. Participants with low financial literacy are found to rather trust informal sources, such as advice from family members, friends, or acquaintances. Respondents with higher financial literacy are much less likely to count on informal sources. On the contrary, they tend to depend on professional financial advisers, read newspapers or magazines, and seek information on the Internet (van Rooij *et al*., 2011, 14). Georgarakos and Inderst (2011) stated that trust in professional financial advice has a significant effect on the stock market participation, but only for households with less financial capital. Wealthier households make a decision based on legal knowledge. Precisely, they rely on their attitude towards their legal rights as consumers (Georgarakos, Inderst 2011, 28). Ritter (2003) has found that a person usually makes a decision based on their net income. This is done by automatically combining the good news of a wealth increase with the bad news of the suspension, which leaves the person having to include their net income into the decision-making process.

According to Dr. Taqadus Bashir (2013), the six most affecting items that influence investor's decision making are dividends, the reputation of a company, personal feelings towards a company's product or service, desire to "get rich quick", company's involvement in solving community problems, and its' overall status in the industry. On the other side, factors that were found to be the least influencing were recommendations from a friend, family member or co-worker, opinions of the company's stockholders, stock price movements, religious reasons, and broker recommendations (Dr. Bashir 2013).

What is more, a study conducted by Dowling and Lucey (2003) resulted in investors appearing to allow their mood state at the time of making an investment decision to influence their judgment.

They also pointed out that sometimes investors can invest in a stock market based on a personal opinion of whether they like or dislike a company (Dowling, Lucey 2003, 228). Christelis, Georgarakos, and Haliassos (2011) found that those who already have a retirement account, are more likely to be participating in the stock market too.

- Overconfidence

There are only a few studies that concentrate on overconfidence. Baker and Nofsinger (2002) have described overconfidence as people thinking they are better at making decisions than they, in fact, are. Taking this into consideration, we can assume that at least some of the investors are overconfident, otherwise, they would not be participating in the stock market. Additionally, overconfidence is found to be leading to a larger willingness to trade compared to investors, who are not as confident (Grinblatt, Keloharju 2009, 552).

- Optimism

Kézdi and Willis (2009) found that optimism leads to a higher probability of stock market participation. What is more, Heaton (2002) claims that optimistic people make too overestimated assumptions about their ability to perform well in the future. Carver (2014) points out that optimism is found to strongly correlate with self-control. Additionally, those who tend to have difficulty with self-control are less likely to have any financial leftovers at the end of the month. This finding is also supported by Cole and Shastry (2011), who found that people with low self-control are also much less likely to gain income from different investment opportunities or to declare having a positive savings balance. Kiyosaki and Lechter (1998) have brought out that failure does courage the winners and destroy the losers. This idea already shows how important the power of our mind and the attitude is.

- Risk-taking and impulsivity

Different preferences for risk-taking are clearly an important determinant of stock market participation. For example, it has been proven that those who have low willingness to take risks also have a much lower probability of participating in the stock market (van Rooij *et al*., 2011, 24). A popular rule of thumb is that stocks are preferred over bonds and other particularly short-

run investments (Haliassos, Bertaut 1995). When taking the gender approach into account, it has been found that women report taking fewer risks than men (Almenberg, Dreber 2012, 9)

Table 1.1.1. Summary of prior research in stock market participation

Determinant	Impact	Prior Research
Age	Positive	Van Rooij *et al* (2011) Cole and Sharsty (2009)
Gender	Positive for males	Van Rooij *et al* (2011) Haliassos and Bertaut (1995)
Education	Positive	Grinblatt *et al* (2011) Vaarmets *et al* (2019)
Major	No effect	Cole and Sharsty (2009)
Financial literacy	Positive	Almenberg and Dreber (2012) Lusardi and Mitchell (2006)
Income	Positive	Van Rooij *et al* (2011) Vissing-Jorgensen (2002)
Financial satisfaction	Positive	Van Rooij *et al* (2011) Vissing-Jorgensen (2002)
Overconfidence	Positive	Grinblatt and Keloharju (2009)
Optimism	Positive	Kézdi and Willis (2009)
Risk taking	Positive	Van Rooij *et al* (2011) Almenberg and Dreber (2012)
Impulsivity	Negative	Haliassos and Bertaut (1995)

1.2. Entrepreneurial Traits

Several authors have pointed out that entrepreneurs have specific personality traits. The most often mentioned traits are: the high need for achievement, need for control, autonomy, independence, self-confidence, initiative, optimism, imagination, persistence, leadership, competitiveness, and risk-taking (Dvir, Sadeh, Pines, Shenhar 2009, 1812). According to Kiyosaki and Lechter (1998), the three most important managerial skills for starting a business are cash flow management, people management, and time management.

Policymakers in Europe and the United States believe that increased levels of entrepreneurship can be reached through education, especially through entrepreneurship education (European Commission 2006). However, the paper conducted by Oosterbeek, van Praag, and Ijsselstein (2010) states that a specific educational program does not have a significant effect on entrepreneurial skills nor traits. Additionally, the effect on entrepreneurial intentions is powerfully negative. What is more, a study conducted by Ćumurović and Hyll (2019) suggests that there is a positive correlation between financial literacy and the likelihood of becoming self-employed.

Also, a typical belief refers to the fact that entrepreneurs are wealthier than others. This has thriven from the idea that entering into the entrepreneurial world requires a lot of financial assets. In fact, many have argued that there is a clear connection between starting a business and having great capital (Evans, Jovanovic 1989; Evans, Leighton 1989; Gentry, Hubbard 2004). However, according to the latest research, the relationship between wealth and entry into entrepreneurship is non-existent, as well as there is no significant evidence that wealth matters more for businesses requiring higher initial capital. This finding is also supported by Fairlie and Krashinsky (2012). Although there is no significant link between being wealthy and starting a business, it has been found that the likelihood for an extremely upscale household to start a business is higher than average. (Hurst, Lusardi 2004, 337). People in positions like entrepreneurs are found to buy shares more likely than others (Vaarmets *et al*., 2019, 95).

Starting a business in itself already is a risky business. Researchers have identified four main personality traits that may drive an entrepreneur to take more risks. These traits are the love of challenge, being committed, being energetic, and investigative (Dvir *et al*., 2009, 1817). Another common view about entrepreneurial risk-taking is that cautious investors put more emphasis on managing and eliminating negative risk whereas optimistic entrepreneurs place more importance on the upbeat potential. This is supported by many studies (Fried, Hisrich 1994; Riding, Short 1987; Shepherd, Zacharakis 2001). However, the new approach is that entrepreneurs miscalculate the risk-mitigation ability of investors and both groups aim attention at the upside potential (Polzin *et al*., 2018, 120). In the study conducted by Polzin, Sanders, and Stavlöt (2018), it was found that when making investment decisions, entrepreneurs tend to rely less on channels such as personal networks and business relations. Instead of that, they look for criteria such as technical skills, personal characteristics, risk assessment, financial numbers, and overall management of the company.

1.3. Hypotheses Development

The financial behavior of entrepreneurs and investors is, in fact, quite similar. Not only are both willing to take considerable risks while expecting high returns, but they are also optimistic and thrive to take control of their circumstances.

The first aim of this thesis was to study the relationship between entrepreneurship and stock market participation. All kinds of entry rates generally increase when wealth rises. Given the fact that very wealthy households are much more likely to start a business, we can assume that wealthier households are also much more likely to start investing. Self-confidence is one of the most common traits of an entrepreneur. They are also known for being optimistic and self-confident, otherwise, they would not start a business given that the chances for being successful are profoundly small. Knowing this, we can argue that entrepreneurs are overconfident when making investment decisions. Since investors rate classical media and personal relations as more important than entrepreneurs, we can assume a significant gap in the results regarding decision-making channels. Entrepreneurs are likely to choose more formal channels, such as market research and financial statements of a firm. In contrast, investors are expected to rely more on the latest media news, the brand of the company, and what financial advisors or their acquaintances think and do.

The second aim of the study was to find out, whether financial literacy affects stock market participation. Financial education should lead to higher financial literacy, however, previous findings state, that financial education alone is not a significant factor in stock market participation, Knowing this, it is easy to estimate that people with financial education have higher financial literacy, and are therefore overconfident. Financial literacy can also be linked to entrepreneurs. Previous research has found a positive correlation between financial literacy and the likelihood of being an entrepreneur. Based on the argument, we can see if the result still holds true.

The main hypotheses for this study are:

1. Being an entrepreneur increases the likelihood of stock market participation.
2. High financial literacy is associated with a greater likelihood of stock market participation.

2. DATA AND METHODOLOGY

2.1. Data

The empirical data used for this thesis was collected from a non-representative survey of individuals. The survey consists of 24 questions, which are divided into 4 parts. The first part covers basic socio-economic information including age, gender, educational level, and specialization. This section also contains questions related to stock market participation. The second part is focusing on financial literacy and overconfidence. The third part consists of questions measuring impulsivity, risk-taking, and optimism. The final part contains questions that proxy wealth and financial satisfaction, and measure entrepreneurial characteristics.

For this study, the opportunity sampling method was used. The targeted population was individuals who have a high probability of being both investors and entrepreneurs. Therefore, the survey was distributed through social media, mostly in relevant Facebook groups such as “Financial freedom group”, “Female investors club”, and “The investment club” with a combined number of participants of about 90 000. Following the methodology of the opportunity sampling method, the participants were not chosen beforehand and everyone was able to participate.

In five days, the survey gathered 760 responses. All respondents were from Finland and Estonia.

2.2. Structure of the Survey

The survey was designed with a balance between simplicity and possibility to be filled in less than ten minutes, and, on the other hand, with a goal to measure underlying information correctly. The questions were either taken from previously conducted studies or self-designed.

As already mentioned, the survey consisted of 24 questions, which were divided into four sub-sections. The first part had six questions and focused on defining the socio-economic characteristics of a participant. These questions included age, gender, the highest-level education,

major, whether a person invested in stocks or not, and if they also invested in something beyond the stock market. In the last question, the participant could choose between a selection of real estate, bonds, crowd-funds, noble metal, start-ups, collectibles, cryptocurrencies, nowhere beyond the stock market, nothing at all, and other.

The second part was put together from seven questions, from which three focused on financial literacy and four on overconfidence. In the financial literacy part, the participant was asked to rate his or her knowledge in the fields of economics, finance, and investing in general on a scale from one (not aware at all) to ten (extremely aware). In the overconfidence part, the participant was asked to compare their investment performance, productivity level as well as their social and math skills with the people they are acquainted with on a scale from one (worse than average) to five (better than average). These questions capture the better-than-average aspect of overconfidence.

The third part had five questions regarding financial decision making, optimism, and risk-taking. The first question was designed to measure the amount of financial risk the participants were willing to take on a scale from one (not willing to take any financial risk) to ten (take high financial risks expecting to earn high returns). The second and third questions were focused on time preferences. The participants were asked to determine the exact amount of money, which they were willing to pay right away in order to receive 1000 EUR after one and ten years. Many respondents did not quite understand these questions which resulted in a large number of missing values. The measure of present bias that was calculated from the responses to these questions has 245 missing values out of 760 responses. The participants were also asked to rate their optimism about their future on a scale from one (very negative) to ten (very positive). Finally, respondents were asked to state factors they take into account when investing (news, market research and financial statements of a company, brand of the company, what their friends/colleagues think and do, other).

In the fourth and final part of the questionnaire, participants were first asked to rate their household income from one (very low) to ten (very high). Second, they could determine their household's last year's net income from a selection of choices. Third, the participants were asked to reveal if they had any money unspent from previous earnings before the new revenues arrived. This was measured on a linear scale from one (never) to ten (always). Fourth, they were asked whether they were satisfied with the financial situation on a scale from one (not satisfied at all) to ten (extremely satisfied). The last two questions were measuring variables of interest, whether the participants were entrepreneurs and in case they were not, whether they had any intention of becoming one.

The variables for this study are described in more detail in Appendix 1.

2.3. Descriptive statistics

The detailed table of descriptive statistics can be found in Appendix 2.

2.3.1. Stock market participation and entrepreneurship

From all the participants, 701 (or 92%) invest in the stock market, while 22% of respondents invest only in the stock market. From other assets, real estate was clearly the most popular investment to hold, having 41% of participants investing in it. This was followed by crowd-funds (26%), bonds (17%), cryptocurrencies (15%), start-ups (15%), noble metals (10%), collectibles (6%) and other assets (4%). Other assets included peer to peer lending, non-listed stocks, options, derivatives, and different funds, such as an exchange-traded fund or index fund. Dependent variable participation is a binary variable that takes the value of 1 if a participant invests in stocks.

Of all the participants, 153 (or about 20%) were entrepreneurs. In regression analysis, entrepreneurs (variable *entrepr_fact*) are valued as 1 and others as 0. The entrepreneurial likelihood (variable *entrepr_likelihood*) is a continuous variable based on a person's self-assessment. The average likelihood was 6.07 with a median of 6 stating that more than half of the participants have the intention of becoming an entrepreneur. In order to use as many observations as possible respondents who are entrepreneurs were assigned a value of 10 for this variable.

2.3.2. Socio-economic characteristics

The sample is not gender-balanced as almost 75% of the participants were male. More precisely, there were 553 male and 201 female respondents. 6 participants preferred not to state their gender (treated as missing values). In regression analysis, males are referred to as 0 and females as 1.

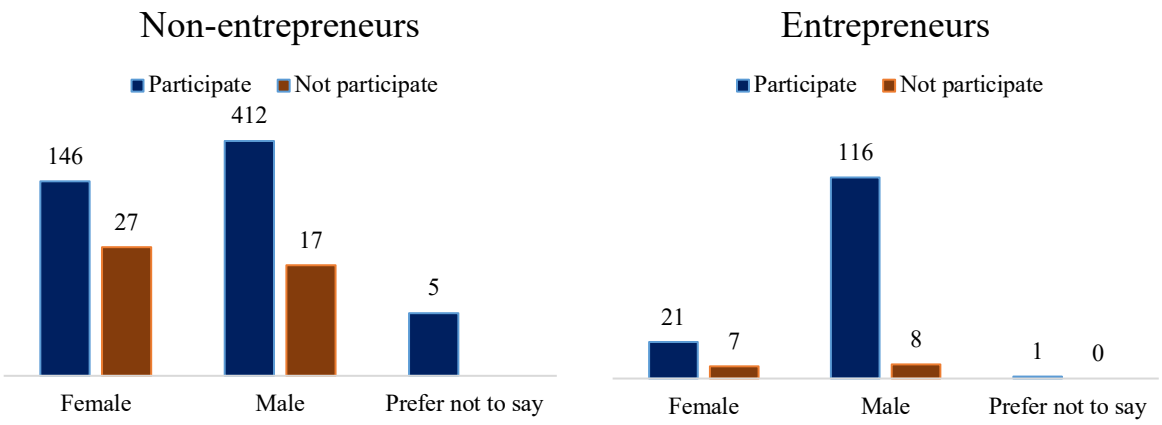

Figure 1. Stock market participation by gender and entrepreneurship.
Source: Mursula (2020), author's survey

The age of participants varied from 15 to 76 with a median of 30 and an average of 32.96 years. Therefore, while the sample is quite young, the variation in age is sufficient. Similarly, the variation in both education and major is good enough (see Figure 2), although the majority of the participants had a bachelor's or master's degree. A dummy variable has been created for each education category. The lowest level of education (less than high school) is not included in regression and, thus, serves as the base category to which all other categories are compared to. All of the majors have been reduced to three large groups, which are statistically significant for the study: finance-related majors (variable *major_fin*), majors that need good math knowledge (variable *major_math*), and others (references category, not included in the regression). Finance related majors include business, economic and financial studies. Majors with good math knowledge are for example hard sciences (maths, physics, chemistry), medicine, and engineering. The third group includes all the other majors, including for example information technologies, law, and arts.

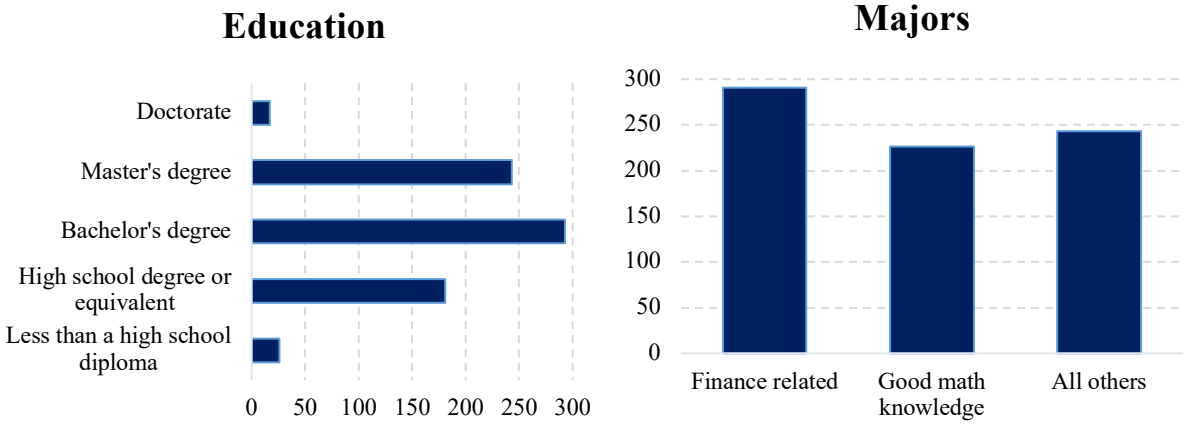

Figure 2. Respondents' education and major.
Source: Mursula (2020), author's survey

Income of participants was measured with several proxies. Firstly, respondents were asked to choose between 8 different levels of annual income (binary variables from *Dincome_1* to *Dincome_8*). 47 participants preferred not to state their income. The income of the majority is 25 000€ - 50 000€. This is followed by 10 000€ - 25 000€, 75 000€ - 100 000€, 100 000€ - 150 000€, Over 150 000€, and Below 10 000€. The lowest level of income (variable *dincome_1*) and those who did not state their income (variable *dincome_8*) are not included in regression and treated as the base category. Secondly, respondents were asked to put themselves on an income scale from 1 to 10 (variable *income_scale*). *Income_scale* is a continuous variable with mean 6.175 and the median 6, suggesting that the majority of participants are earning slightly more than the average. Thirdly, respondents' income was proxies with a question if they have unspent money after spendings and before the arrival of new revenues (scale from 1 to 10). The average for this variable, *income_proxy*, is 7.74 with a median of 9. This states that almost all of the participants have available money for investing or saving. It also states that they are smart consumers with little to no financial issues. Finally, the mean for financial satisfaction (variable *income_satisfaction*, scale 1 to 10) is 6.83 and the median is 7. Most of the participants seem to be satisfied, however, there is a slight suggestion that the financial situation could be better.

2.3.3. Preferences and attitudes

Financial literacy was measured with three self-assessed scales (from 1 to 10). The average level of relevant knowledge is 6.73 with a median of 7 (variable *knowledge*). As the sample includes mainly experienced investors, high average financial knowledge is expected.

A similar approach was used to determine the level of overconfidence. The mean for overconfidence was 3.54 and the median 3. This points to an extremely low level of overconfidence. In case these results are true, they indicate the maturity and realistic judgment of the participants. However, the low result might also be due to the fact that the approach was self-assessment. The questions were based on a better-than-average method, which is quite common and easily recognized. It might be the case that some of the participants deliberately gave a lower score as an answer.

Risk attitudes and optimism are continuous variables based on participants' self-assessment. The mean for risk-taking is 7.15 and 7.78 for optimism. The medians were accordingly 7 and 8. As predicted, the investors are more likely to take risks and expected to be with a positive mind-set.

Time preferences and, specifically, present bias was measured with implicit interest rates questions. The participants were asked to determine the exact amount of money, which they were willing to pay right away to receive 1000 EUR of profit after one and ten years. The implicit discount rates were calculated using a straightforward formula (1000 divided by respondents answer minus 1). If the implied one-year discount rate is greater than the rate for ten years, the respondent is coded as having a present bias (variable *present_bias*). The variable takes the value of 1 if a person has a present bias, otherwise, it is 0. However, some of the participants had trouble understanding the question. 245 participants had answered the question incorrectly or did not provide the answer at all. In the regression analysis, another binary variable mistake has been created which takes the value of 1 if a person did not answer the question about a one-year implied discount rate correctly. In the regression, I also use the one-year implicit discount rate to control for time-consistent time preferences (variable *implrateY1*).

Finally, a dummy variable has been created for investment decision approaches. Almost 98% of participants take market research and financial statements of a company into consideration when making an investment decision. Additionally, it is popular to make technical analysis and take a closer look at the ratio of stock price and value. The overall situation of the world economy is also effective, as is the fact, whether a company pays dividends or not. The latest media news (52.4%), as well as the brand of the company (52.1%), are other important approaches to making a decision. What is more, people tend to follow the company's vision, values, the management, or even ethnicity and include these into the decision-making process. People also follow megatrends, which supposedly affect market performance. Only 18.7% of investors consider what their friends or colleagues think and do. However, a few of them value the opinion of professional advisors or follow a certain investment plan. Some of the investors have decided to keep an eye on banks and other popular communities and acting exactly opposite to those. Additionally, people follow their personal preferences, beliefs, and gut feeling.

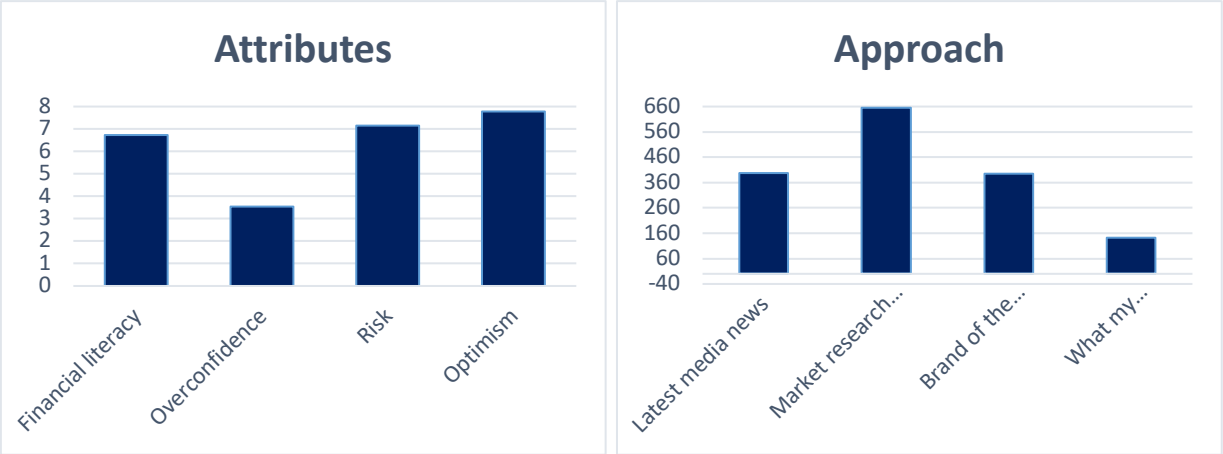

Figure 3. Overview of the respondents' attributes
Source: Mursula (2020), author's survey

2.4. Methodology

The analysis of this thesis will be conducted using quantitative research methods. Specifically, this study uses cross-sectional regression analysis to determine which variables have an impact on stock market participation and test hypotheses specified in Section 1.3.

The main dependent variable, therefore, is stock market participation and independent variables are entrepreneurship, entrepreneurial likelihood, education, major, financial literacy, financial satisfaction, income, optimism, risk, overconfidence, time preferences, other investments, and investing habits. Since the dependent variable is binary, the used analysis form is logistic regression. The main analysis will be conducted through Gretl using the logit model. The model setup will be described in Section 3.1. Any further connections between variables were studied with separate correlation models through Excel. This study recognizes three levels of significance, 0.01 or 1%, 0.05 or 5% and 0.10 or 10%. The result is considered statistically significant if the p-value is lower than one of these values.

Since the dependent variable *participation* is imbalanced (92% of respondents participate in the stock market), the final model will be rerun with a probit model. This robustness test will be done to get more accurate results. Besides, I am running two additional logit models. I have excluded variables *present_bias* and *implrateY1* from both models, however, one of the models includes the income scale, while the other one includes different income levels.

3. EMPIRICAL RESULTS

3.1. Regression results

For logistic regression, I have prepared six different models to test the hypotheses. The dependent variable in the regression is stock market participation (*participation*). The first models are simple and only include socio-economic characteristics such as age, gender, income, educational level, and major. The next models include financial literacy and risk-taking, with the addition of time preferences in the fifth model. The final model includes overconfidence, and optimism, and studies the relationship between stock market participation and entrepreneurship or the intention to become one.

There are 754 respondents in the first models. Since six people preferred not to state their gender, they were excluded from the regression. Additionally, since 245 participants had answered the question about time preferences incorrectly or did not provide the answer at all, they have been excluded from the regression too. Therefore, the number of participants included in the regression is 509 in final models. *Dincome_1* represents the dummy for income below 10 000. Next income dummies are for income 10 000 - 25 000, a dummy for income 25 000 - 50 000, a dummy for income 50 000 - 75 000, a dummy for income 75 000 - 100 000, a dummy for income 100 000 - 150 000, a dummy for income over 150 000, and a dummy for "prefer not to say ", respectively. As I was only interested in participants who had higher income, dummies 1 (below 10 000) and 8 (prefer not to say) were excluded from the regression. Investment habits and other assets were only used when making additional analyzes and excluded from the actual regression. The first column in the regression result model represents the odds ratio and the second column standard error. The stars ***, ** and * represent the significance level of 1 %, 5 % and 10 % respectively. The number below the model represents the number of observations. The adjusted R-squared (adjusted R2 from now on) measures the explanatory power of regression models. It is highest in model 4, which makes it the most meaningful model. Respectively, the adjusted R2 is lowest in model 2, making it the weakest model in this regression. Six models below represent the logistic regression results.

Table 3.1.1 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	0.196	(0.285)	***	0.207	(0.293)	***	0.181	(0.304)	***	0.267	(0.325)	***	0.301	(0.410)	***	0.226	(0.452)	***
age	1.056	(0.016)	***	1.042	(0.018)	**	1.034	(0.019)	*	1.033	(0.020)	*	1.019	(0.026)		1.020	(0.027)	
income_proxy				1.016	(0.056)		1.018	(0.056)		0.985	(0.060)		0.901	(0.084)		0.908	(0.087)	
income_satisfact~				1.118	(0.077)		1.135	(0.078)		1.084	(0.084)		1.167	(0.111)		1.217	(0.117)	*
10 000 - 25 000€				1.709	(0.428)		1.396	(0.452)		1.267	(0.484)		1.159	(0.592)		1.086	(0.614)	
25 000 - 50 000€				2.446	(0.428)	**	1.935	(0.453)		1.862	(0.480)		2.155	(0.599)		2.352	(0.639)	
50 000 - 75 000€				1.557	(0.498)		1.304	(0.526)		1.150	(0.550)		1.428	(0.705)		1.947	(0.769)	
75 000 - 100 000€				2.017	(0.599)		1.677	(0.623)		1.209	(0.650)		3.159	(0.927)		3.351	(0.968)	
100 000 - 150 000€				5.722	(1.084)		4.617	(1.106)		3.375	(1.137)		3.639	(1.283)		4.666	(1.330)	
over 150 000€				1.462	(0.852)		1.541	(0.892)		1.495	(0.943)		1.325	(1.256)		1.529	(1.283)	
education_high							0.885	(0.824)		1.030	(0.836)		3.107	(0.993)		3.536	(1.041)	
education_bac							2.056	(0.847)		2.146	(0.858)		6.346	(0.993)	*	8.302	(1.050)	**
education_mas							1.348	(0.869)		1.268	(0.883)		4.905	(1.053)		5.251	(1.104)	
education_doc							1.931	(1.391)		2.807	(1.433)		2E+09	(18154.8)		3E+09	(18743.1)	
major_fin							0.932	(0.396)		0.691	(0.412)		0.262	(0.615)	**	0.285	(0.633)	**
major_math							0.411	(0.374)	**	0.496	(0.393)	*	0.227	(0.609)	**	0.207	(0.642)	**
knowledge										1.314	(0.104)	***	1.287	(0.133)	*	1.372	(0.146)	**
mistake										0.919	(0.324)							
risk										1.359	(0.089)	***	1.366	(0.113)	***	1.332	(0.119)	**
implrateY1													0.999	(0.001)		0.999	(0.001)	
present_bias													0.336	(0.549)	**	0.384	(0.562)	*
optimism																0.842	(0.148)	
overconfidence																0.512	(0.435)	
entrepr_fact																0.238	(0.727)	**
entrepr_likeliho~																1.177	(0.102)	
N	754			754			754			754			509			509		
Adj. R2	8.5%			7.0%			7.5%			12.3%			11.5%			12.2%		

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

The first model shows the highest significance level for both independent variables. The results show that there is a much higher likelihood to be participating in the stock market among men than women. Although the magnitude slightly changes, the effect of gender stays as strong and significant in all models. The results also suggest that the likelihood of investing in the stock market increases with age. The significance level of age keeps dropping as more variables are added. Age becomes statistically insignificant in model 5.

The results suggest that those who earn an income of 25 000 to 50 000 have the highest likelihood of participating in the stock market. The results are significant on a 5% level. Other income levels, *income_satisfaction*, and *income_proxy* are not statistically significant at all. These results do not follow the previous findings, which suggest that the participation increases with the higher income. The only significant income level becomes insignificant when adding education and major to the regression.

In the third model, the variable for major, which requires good math knowledge is statistically significant on a 5% level. The significance level stays the same in all models, except for model 4, where it decreases to a level of 10%. According to these results, people who know and understand mathematics are less likely to participate in the stock market.

The level of statistical significance keeps fluctuating for financial literacy (*knowledge*), however, the variable is always statistically significant. Willingness to take risks is clearly significant in each model, however, the significance level goes from 1% to 5% in the last model. The results show that having higher financial literacy and risk-taking leads to a higher likelihood of stock market participation. These results strongly suggest the same as in previous studies.

Adding time preferences changes education and major more significant and financial literacy less significant than before. These results also suggest that obtaining a bachelor's degree leads to higher participation, yet, obtaining financial or mathematical education, leads to a lower likelihood of participating. Present bias is statistically significant on a level of 5% when the entrepreneurial fact nor likelihood was not taken into account. After adding more variables, the significance level decreases. The results, however, state that people who are willing to wait for a longer period to get a higher profit, are more likely to participate.

In the last model, *income_satisfaction* becomes statistically significant on a 10% level. These results state that people, who are satisfied with their income, are more likely to invest in stocks. Additionally, the significance of bachelor level education becomes more significant than before. Model 6 also indicates that the fact of being an entrepreneur decreases the likelihood of participating in the stock market. The likelihood of becoming an entrepreneur in the future was not statistically significant and did not affect the significance of other variables.

3.2. Robustness tests

In this section, three additional models are run as a robustness test. The robustness test is necessary since the dependent variable participation is imbalanced (92% of respondents participate in the stock market). The first model of the robustness test is the final regression model rerun with a probit model. Besides, I am running two additional logit models from which I have excluded variables *present_bias* and *implrateY1*. However, one of the models includes the income scale, while the other one includes different income levels. These two variables were found to be correlating, which is the reason for excluding the *income_scale* from the original regression and running two separate tests. Further correlations between variables are displayed in Appendix 3.
By excluding *present_bias* and *implrateY,* the number of observations can be increased to the original 754. Additional tests have been run with the sample size of 509, as in the final model. These models are not displayed here but discussed where necessary.

The original idea was to run the final model with a new dependent variable *only_stocks* (which takes the value of 1 is a respondent invests only in stocks and 0 otherwise). However, these results presented the adjusted R2 of only 0.5%, and the model was not suitable enough to use.

The first column in the model represents the coefficient for the probit model and odds ratio for the logit model. The second column represents the standard error.

Three models below represent the robustness test results.

Table 3.2.1 Robustness test results

	Model 1			Model 2			Model 3		
Variable	Coef.	St. Err		Odds	St. Err		Odds	St. Err	
gender	-0.747	(0.229)	***	0.209	-0.347	***	0.210	(0.343)	***
age	0.007	(0.013)		1.035	-0.021	*	1.047	(0.020)	**
income_scale							0.850	(0.109)	
income_proxy	-0.050	(0.043)		1.004	-0.062		1.009	(0.060)	
income_satisfact~	0.097	(0.061)		1.115	-0.089		1.192	(0.094)	*
income_2	0.105	(0.335)		1.129	-0.506				
income_3	0.426	(0.328)		1.880	-0.503				
income_4	0.283	(0.388)		1.273	-0.577				
income_5	0.640	(0.478)		1.148	-0.665				
income_6	0.952	(0.712)		3.088	-1.145				
income_7	0.347	(0.688)		1.612	-0.945				
education_high	0.675	(0.531)		1.115	-0.854		0.989	(0.861)	
education_bac	1.059	(0.534)	**	2.510	-0.880		2.602	(0.890)	
education_mas	0.879	(0.556)		1.297	-0.903		1.325	(0.909)	
education_doc	6.561	(2841.770)		2.931	-1.466		3.170	(1.474)	
major_fin	-0.618	(0.307)	**	0.721	-0.423		0.642	(0.421)	
major_math	-0.787	(0.309)	**	0.454	-0.415	*	0.411	(0.413)	**
knowledge	0.171	(0.075)	**	1.416	-0.114	***	1.384	(0.111)	***
mistake				0.905	-0.334		0.912	(0.333)	
risk	0.138	(0.063)	**	1.347	-0.093	***	1.334	(0.092)	***
implrateY1	0.000	(0.000)							
present_bias	-0.509	(0.278)	*						
optimism	-0.090	(0.078)		0.935	-0.112		0.934	(0.112)	
overconfidence	-0.339	(0.218)		0.505	-0.341	**	0.617	(0.342)	
entrepr_fact	-0.671	(0.367)	*	0.243	-0.556	**	0.237	(0.558)	***
entrepr_likeliho~	0.084	(0.051)	*	1.093	-0.079		1.096	(0.079)	
N	509			754			754		
Adj. R2	11.4%			14.1%			16.4%		

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

The first model highlights the same results as in logistic regression analysis. A significant difference, however, can be seen in the likelihood of becoming an entrepreneur. In the probit model, the level of significance for the entrepreneurial tendency is 10%. Additionally, the entrepreneurial fact is statistically less significant than before. According to these results, the intention of becoming an entrepreneur leads to a higher likelihood of participating in the stock market. This result suggests the exact opposite of the entrepreneurial fact.

From the next two models, it is clear that the exclusion of time preferences makes a willingness to take risks and financial literacy more significant than in the original models. For the most part, the models are quite similar. However, overconfidence is only statistically significant when the income gaps are included. On the other hand, *income_satisfaction* is only significant when the scale is

included. Also, age, mathematical major, and the entrepreneurial fact become more significant when the effect of *income_scale* is taken into account. According to these results, overconfident people tend to participate less in the stock market. This finding does not support previous findings.

Adjusted R2 in the first model is 11.4%, which categorizes the model to the weakest robustness test model. It is also weaker than the final logit model. The next two models are much more significant with the adjusted R2 of 14.1% and 16.4%, which are the highest adjusted R2 levels in the whole study.

3.3. Discussion

This section will focus on discussing the hypotheses and their accordance with the findings. I will also go through the limitations of the study and give suggestions for future research.

Based on robustness tests, which results strongly corresponded to the original findings, it is safe to say that the models are trustworthy. The results of this research also support the previous findings. It was no surprise to see that men participate in the stock market much more than women. It could already be seen from the very beginning since almost 75% of the respondents were male. Age is a rather significant determinant although it becomes insignificant after the time preferences, as well as, optimism and overconfidence have been added. The significant results, however, are the same as in previous studies and indicate that the likelihood of participating increases with age. Previous studies suggest that stock market participation increases heavily with both income and wealth levels, however, my findings found the participation to be centered on those who earn 25 000 to 50 000€ per year. I also studied the effect of income proxy, which was used to describe the remaining wealth level before the next revenues arrived, and income scale, which described the overall income level of the household. Both of these variables remained insignificant and it is impossible to draw any conclusions regarding the accuracy of previous studies. On the other hand, financial satisfaction is a significant variable in one of the models and in accordance with past findings.

The first main hypothesis was that being an entrepreneur increases the likelihood of stock market participation. The financial behavior of investors and entrepreneurs is believed to be similar because they both place great importance in taking high financial risks expecting high returns as

well as taking control of their circumstances. However, when investigating this question it became clear that there is a negative correlation between being an entrepreneur and stock holding. Therefore, the first hypothesis is rejected. What is more, this finding does not follow the previous findings. The entrepreneurial fact becomes significant only when including overconfidence and optimism into the analysis, which makes it clear that these two variables are important traits of an entrepreneur and affect them more than the regular investor. Overconfidence and optimism were not significant otherwise, which was unexpected. However, the self-assessed level of overconfidence was extremely low and might not have affected the regression because of that. Robustness test results suggest that overconfidence leads to a lower likelihood of participation. This finding is against all expectations and does not follow results from previous literature.

The negative effect on entrepreneurial participation might most likely be caused by ground risk. As predicted, the willingness to take risks is significant when investigating stock market participation. If a person already takes a lot of risks, then they may decline the opportunity to take even more risks. Since both investing and running a business are risky activities, it might be the case that entrepreneurs do not want to invest in the stock market and the other way around. However, the robustness test suggests that the intention of becoming an entrepreneur leads to a higher likelihood of stock market participation. This finding supports the expectations and states that investors and entrepreneurs have similar personality traits.

The second main hypothesis was that high financial literacy is associated with a greater likelihood of stock market participation. As previously explained, it has been found that higher levels of intelligence and education lead to a higher likelihood of stock market participation. This finding is supported since the bachelor's degree was a significant determinant when investigating the educational level. Additionally, the results show that it is extremely important to have high financial literacy when investing in stocks. These results follow the line of previous findings. However, the correlation between entrepreneurial fact and financial knowledge is extremely low. For this reason, it is not possible to draw any conclusions regarding the statement that entrepreneurs have higher financial literacy. Overall, the evidence is consistent with the hypothesis, therefore, the second hypothesis is accepted.

Regression results also show that participants with financial and mathematical majors are less likely to participate, so it is clear that finance-related major alone is not enough to lead to higher stock market participation. From this, we can say that financial knowledge has not been obtained

from educational institutions alone. The finding itself follows the same line as previous research. It was surprising to see that the correlation between financial education and financial literacy was only 31%. This indicates that having financial education alone is not enough to be on top of the investing game. This again leads to a question of whether the quality of financial education in Finland and Estonia is what it should be and makes a great topic for future studies. However, it is important to keep in mind that the sample was concentrated on people with higher financial literacy (investors and entrepreneurs) and the results do not apply to the larger assembly.

From other assets, real estate turned out to be the most popular investment among both entrepreneurs and general investors. Participants also invest in crowd-funds, bonds, cryptocurrencies, start-ups, noble metals, collectibles, and other assets, relatively. Other assets include, for example, peer to peer lending, non-listed stocks, options, derivatives, and different funds, such as an exchange-traded fund or index fund.

When making an investment decision, both investors and entrepreneurs were expected to rely on the company's financial numbers. This expectation was proven correct, as all the participants focus most on the market research and financial statements of a company. It is also widely popular to make technical analysis and take a closer look at the ratio of stock price and value. The preferences are followed by the latest media news, the brand of the company, and the opinion of their acquaintances. What is more, personal preferences play a significant role in the decision-making process. For example, people tend to consider the company's vision, values, management, or even ethnicity when making a decision. No significant gap was found between the preferences of investors and entrepreneurs.

CONCLUSION

This thesis takes a look at different factors that affect the stock market. Specifically, it focused on whether entrepreneurship is a predictor of participation in addition to other factors that were shown to matter by previous studies. From other factors, the effect of higher financial literacy was studied in more precise.

The first aim of this study is to find out whether being an entrepreneur increases the likelihood of stock market participation. Since the financial behavior of investors and entrepreneurs is found to be quite similar, entrepreneurs were expected to invest in stocks more.

The second aim of this study was to find out whether high financial literacy is associated with a greater likelihood of stock market participation. This thesis also takes a look at the different investing habits and tries to find out, whether financial education leads to higher financial literacy. We can assume that people with financial education have higher knowledge in financial literature and can make better investment decisions. The goal is to find out if this is true and whether educational institutions should pay more attention to the quality of their financial education.

All the research questions were answered. The main research questions used in this study were:

1. Does being an entrepreneur lead to higher stock market participation?
2. Does higher financial literacy lead to higher stock market participation?
3. Which other factors affect the stock market participation and do they follow the same line as previous studies?

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

1. Being an entrepreneur increases the likelihood of stock market participation.
2. High financial literacy is associated with a greater likelihood of stock market participation

For the most part, the results support previous findings.

In line with previous literature, the participation rate among men is much higher than among women and the participation tends to increase with age. The statement that stock market participation heavily increases with wealth and income levels was disproved, as the scale of an income was found to be insignificant. Having a university degree is fundamental, although the level of a degree is not. What is more, the studied major is unrelated to stock market participation and it is questionable, whether the financial literacy obtained from educational institutions alone is enough to be successful in the investment game. As before, high financial literacy and willingness to take risks are essential, however, optimism and overconfidence found to be irrelevant in this study. The fact of being an entrepreneur was found to lead to participating less in the stock market.

Based on these results, the first hypothesis was rejected and the second hypothesis was accepted.

What is more, real estate turned out to be the most popular investment in both entrepreneurs and general investors, as predicted. When making an investment decision, investors focus most on the market research and financial statements of a company. They also consider the latest media news as well as the brand of the company, however, they do not consider the opinion of their acquaintances that often.

For future research, the correlation between financial education and financial literacy should be investigated in more detail. For example, this study raises the question of whether the quality of educational institutions in Finland and Estonia is what it really should be. The results indicate, that the financial education from one institution alone is not enough to nail the investing game, at least not in the stock market. However, this result is only applicable for one sample, and the issue itself requires further investigation.

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APPENDICES

Appendix 1. Description of variables

Variable	Description	Measurement
Age	Statement of age	Text box where person enters the number
Gender	Statement of gender	Choice between male/female/prefer not to say/other
Basic education	Question about educational level	Choice between less than a high school diploma, high school degree or equivalent, bachelor's degree, master's degree, and PhD
Specific education	Question about educational major	Choice between finance, economics, business, hard sciences, social sciences, arts, medicine, information technologies, engineering, no major, and other
Stock market participation	Question whether participants hold stocks	Choice between yes and no
Other assets	Question whether participant hold any other investments	Choice between real estate, bonds, crowdfunding, noble metal, start-ups, collectibles, cryptocurrencies, nowhere beyond the stock market and nowhere in general
Financial literacy	Please rate your knowledge in the field of economics	Linear scale from 1 (not aware at all) to 10 (extremely aware)
Financial literacy	Please rate your knowledge in the field of finance	Linear scale from 1 (not aware at all) to 10 (extremely aware)
Financial literacy	Please rate your knowledge in the field of investing in general	Linear scale from 1 (not aware at all) to 10 (extremely aware)
Overconfidence	Compared with the investors you are acquainted with; you believe your investment performance is:	Linear scale from 1 (not as good as the average) to 5 (better than the average)
Overconfidence	Compared with your colleagues, you believe your productivity level at school/work is:	Linear scale from 1 (not as good as the average) to 5 (better than the average)
Overconfidence	Compared with the people you are acquainted with; you believe your social skills are:	Linear scale from 1 (not as good as the average) to 5 (better than the average)

Overconfidence	Compared with the people you are acquainted with; you believe your math knowledge and skills are:	Linear scale from 1 (not as good as the average) to 5 (better than the average)
Risk	Please rate the amount of financial risk that you are willing to take when you save or make investments	Linear scale from 1 (not willing to take any financial risk) to 10 (take high financial risks expecting to earn high returns)
Time preference	How much you are willing to pay right now for a guaranteed possibility to receive 1000 EUR in exactly 1 year?	Text box where person enters the number
Time preference	How much you are willing to pay right now for a guaranteed possibility to receive 1000 EUR in exactly 10 years?	Text box where person enters the number
Optimism	How optimistic are you about your future?	Scale from 1 (very negative) to 10 (very positive)
Decision making habits	What do you consider important in making a decision?	Choice between latest media news, market research and financial statements of a company, brand of the company, what my friends/colleagues think and do, and other
Income	On the scale of 1 to 10, you would describe the income of your household as:	Linear scale from 1 (very low) to 10 (very high)
Income	Which of these describes your household's net income last year?	Choice between below 10 000, 10 000 - 25 000, 25 000 - 50 000, 50 000 – 75 000, 75 000 – 100 000, 100 000 – 150 000, over 150 000, and prefer not to say
Income	How often during the last year you (your family) had any money unspent from previous earnings before the next moment for new revenues arrived?	Scale from 1 (never) to 10 (always)
Financial satisfaction	How satisfied are you with the financial situation of your household?	Linear scale from 1 (not satisfied at all) to 10 (extremely satisfied)
Entrepreneurship	Are you an entrepreneur?	Choice between yes and no
Entrepreneurial likelihood	If no, how likely are you to become an entrepreneur?	Scale from 1 (extremely unlikely) to 10 (extremely likely)

Source: Mursula (2020), author's survey

Appendix 2. Descriptive statistics

Variable	Mean	Median	SD	Min	Max
Participation	0.92	1	0.27	0	1
Age	32.96	30	10.95	15	76
Gender	0.27	0	0.44	0	1
Less than a high school diploma	0.03	0	0.18	0	1
High school degree or equivalent	0.24	0	0.43	0	1
Bachelor's degree	0.38	0	0.49	0	1
Master's degree	0.32	0	0.47	0	1
Doctorate	0.02	0	0.14	0	1
Dummy major					
Finance related	0.38	0	0.49	0	1
Good math knowledge	0.30	0	0.46	0	1
Other	0.32	0	0.47	0	1
Dummy income					
Below 10 000€	0.05	0	0.22	0	1
10 000€ - 25 000€	0.18	0	0.39	0	1
25 000€ - 50 000€	0.26	0	0.44	0	1
75 000€ - 100 000€	0.18	0	0.38	0	1
100 000€ - 150 000€	0.12	0	0.32	0	1
Over 150 000€	0.09	0	0.29	0	1
Prefer not to say	0.06	0	0.24	0	1
Income scale	6.18	6	1.88	1	10
Income proxy	7.74	9	2.78	1	10
Income satisfaction	6.83	7	2.02	1	10
Knowledge	6.73	7	1.65	1	10
Overconfidence	3.54	3	0.54	1	10
Risk taking	7.15	7	1.64	1	10
Optimism	7.78	8	1.56	1	10
Present bias	0.68	1	0.47	0	1
Entrepreneurial fact	0.2	0	0.4	0	1
Entrepreneurial likelihood	6.07	6	3.01	1	10

N=760
Source: Mursula (2020), author’s calculations

Appendix 2. Descriptive statistics (continued)

Variable	Mean	Median	SD	Min	Max
Dummy approach					
Latest media news	0.52	1	0.5	0	1
Market research and financial statements of a company	0.86	1	0.34	0	1
Brand of the company	0.52	1	0.5	0	1
What my friends/colleagues think and do	0.19	0	0.39	0	1
Personal preferences	0.06	0	0.23	0	1
Dummy assets					
Real Estate	0.41	0	0.49	0	1
Crowd-funds	0.27	0	0.44	0	1
Bonds	0.17	0	0.38	0	1
Cryptocurrencies	0.14	0	0.35	0	1
Start Ups	0.15	0	0.35	0	1
Noble Metal (Gold & Jewelry)	0.1	0	0.3	0	1
Collectibles	0.05	0	0.22	0	1

N=760
Source: Mursula (2020), author's calculations

Appendix 3. Correlation matrix

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1. participation	1																
2. gender	-0.19	1															
3. age	0.11	0.13	1														
4. education	0.08	0.03	0.26	1													
5. major_fin	0.01	0.07	-0.13	0.07	1												
6. major_math	-0.10	-0.09	0.04	0.05	-0.54	1											
7. income_scale	0.02	0.02	0.37	0.20	-0.05	0.08	1										
8. income	-0.01	0.01	0.36	0.15	-0.05	0.10	0.26	1									
9. income_proxy	0.02	-0.04	-0.05	0.11	-0.06	0.08	0.14	0.04	1								
10. income_satisfact.	0.12	-0.09	0.17	0.11	0.01	0.07	0.51	0.15	0.28	1							
11. risk	0.24	-0.27	0.02	0.03	0.07	-0.05	0.05	0.04	0.06	0.15	1						
12. optimism	0.03	-0.09	-0.13	-0.01	0.10	-0.11	0.10	-0.01	0.02	0.18	0.17	1					
13. overconfidence	0.00	-0.10	-0.01	0.05	0.07	-0.01	0.26	-0.04	0.13	0.17	0.08	0.25	1				
14. knowledge	0.23	-0.15	0.14	0.15	0.31	-0.23	0.22	0.07	0.11	0.26	0.39	0.23	0.36	1			
15. entrepr_fact	-0.02	-0.11	0.11	0.00	-0.05	-0.07	0.12	0.02	0.01	0.04	0.09	0.01	0.15	0.08	1		
16. entrepr_likeli.	0.07	-0.18	-0.08	-0.06	-0.02	-0.08	0.12	-0.02	0.12	0.09	0.18	0.15	0.24	0.17	0.67	1	
17. present_bias	-0.12	0.12	0.01	0.00	-0.08	0.03	-0.02	0.02	-0.06	-0.05	-0.08	-0.01	0.01	-0.10	0.07	0.03	1

Source: Mursula (2020), author's calculations

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