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INVESTORS' AGE, GENDER, AND ESG AWARENESS IN SUSTAINABLE INVESTING

Bachelor's Thesis
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I hereby declare that I have compiled the paper independently
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ABSTRACT

The main goal of the research is to find out how age, gender and ESG awareness are affecting on sustainable investing decision making. The research data is collected with a questionnaire by volunteer sampling method in social media. In this paper, logistic regression is used to answer if young people invest more to sustainable investment instruments than older people and if women are more industrious to invest in these instruments. Linear regression instead is used to study association of environmental, social and governmental (ESG) awareness to the share of sustainable investments from the total investing portfolio. The study does not find clear results if young people would invest more to sustainable investments than older people, or if higher ESG awareness would lead to higher share of sustainable investments from the total investing portfolio. However, the study finds a strong negative association between gender and investing in sustainable investments, which means that according to the findings, the sustainable investing market would be rather run by male investors.

Keywords: Investing, Sustainable investing, SRI, ESG

INTRODUCTION

In investing markets, relatively new strategy to invest called sustainable investing, has faced a great increase in its popularity. This multidimensional ideology follows the aim of contributing to some environmental, social or governmental issue while also expecting financial returns from investing in such instruments or organization that strives for sustainability (Bugg-Levine, Emerson 2011, 5). According to this ideology, at least two different motivators are identified driving investors towards their goals. Besides the obvious goal to improve community value, the other main goal of sustainable investing can also be profit focused (Kooskora *et al* 2019, 472). Investors tend to screen different investment instruments based on their sustainability as well as focus on the financial returns. Namely, these investors value subsectors that can offer market-rate returns and at the same time the investors are able to achieve some social and/or environmental impacts (Monitor Institute 2013, 31).

Sustainable investing as a concept touches close the ideology of sustainable development. Sustainable development focuses on sustainability of nature, life support and community as well as development of equity of people, economy and society (Kates *et al.* 2005, 11). While, sustainable investing focuses on financing of issues regarding sustainable development. One of the biggest challenges relating this concept that has appeared in the investors' opinion is lack of information that they face during the investing process. Investors feel that they do not get enough information about the instruments and their performance. The success measurement is a hard process, especially in respect of social achievements. (Mendell, Barbosa 2013, 118) Therefore, even people would be aware of sustainable development and its issues, sustainable investing as a field of study needs more investigation relating to investor behavior and opportunities that it enables.

The research of this paper focuses on sustainable investing behavior. The main goal of the research is to find out how age, gender and ESG awareness are affecting on sustainable investing decision making, by answering to three following research questions:

1. Is the sustainable investing market run by young investors?
2. Are women more active in case of investing in sustainable investments than men?
3. Is awareness of environmental, sustainable and governmental (ESG) issues associating positively with the share of sustainable investments of investor's total investing portfolio?

The analysis models used in the research are logistic regression and linear regression (OLS). Logistic regression is used to answer if young people invest more to sustainable investment instruments than older people and if women are more industrious to invest in these instruments. Linear regression instead is used to study association of environmental, social and governmental awareness to the share of sustainable investments from the total investing portfolio.

In its entirety, the paper is shared to three parts. The first part covers the literature review of sustainable investing. The literature review introduces first the markets, different dimensions and areas where sustainable investing works as a strategy, then the chapter splits the main drivers of sustainable investors into two sections, responsibility and financial profit, and adduces features that make these standpoints to be stand-alone as well as connected to each other. In the end of the chapter, the most accurate challenges of sustainable investing especially from investors' point of view are discussed. The second chapter, methodology, introduces the data that the survey has brought forth. Different variables are explained and their impacts on the research are described with descriptive statistics and figures. The research method and analyses used in the research are introduced in the end of this chapter. The third part of the paper presents the results that different models of regression analyses have generated for the research questions. This chapter also covers a discussion section where the results are described briefly.

1. LITERATURE REVIEW

1.1. Sustainable investing

Sustainable investing as a concept is quite multidimensional. Different phrases, such as responsible investing, socially responsibility investing (SRI) and sometimes environmental, social and governance (ESG) investing, all may be used to describe the same broad concept. However, the use and application of the phrases also vary among the scientists and other professionals. Some of the phrases and expressions may be seen as umbrella terms, and some covering the whole concept. Nevertheless, these terms and expression are closely related, and they may be used to describe the same idea, investing sustainably. Therefore, in this bachelor's thesis, term "sustainable investing" is used to outline this idea.

The primary aim of sustainable investing is to follow and contribute to some environmental, social or governmental issue while also expecting financial returns from investing in such instruments or organization that strives for sustainability (Bugg-Levine, Emerson 2011, 5). The sustainable investing strategy has increasingly gained attention during the recent years, as, inter alia, the investing markets have given it more foothold and the common finance literature has stressed the topic increasingly. In 2016, there were already 22.8 trillion US dollars invested in instruments that follow some sustainable investment strategy (OECD 2019, 8). According to Global Sustainable Investment review (2018), Europe's share from this global overall was 53% in 2016, yet it declined to 49% by 2018. However, it should be noted that the drop in Europe's overall share is not due to decrease in the amount of assets invested. The total assets invested in the European markets actually increased with 11%, reaching 12.3 trillion euros during the same time period. (Global Sustainable Investment Alliance 2018, 4) In the US markets, it is said that sustainable investing is among the fastest growing investing phenomena, growing approximately by 20% every year (US SIF Foundation 2018, 1). Still despite of the heavy increase in the US markets, between 2016 and 2018 the fastest growing were Japanese, Australian, New Zealander and Canadian sustainable investing markets (Global Sustainable Investment Alliance 2018, 3). These numbers indicate that

people are increasingly interested in combining sustainable development and money. To understand why this phenomenon is becoming a trend in the investment markets, we need to focus on the factors that have had influenced on it.

Three primary factors may be recognized as having the most significant influence on the growth of sustainable investment industry. First of all, increasingly larger amount of different references and accessibility to information have been in a big position of the growth. According to Schueth (2003), amount of information walks hand-in-hand with the scope of responsibility. Namely, the more people have general knowledge the more they are aware about different impact options and causation behind the responsible activity. With the growing access to information, another crucial factor is that the investors have increasingly started to learn how the sustainable investing market is actually performing. Some scientists also suggest that women have addressed more interest to social aspects than men. Based on this fact, women's interest and growing authority has been listed as a third reason for sustainable investing industry growth. (Schueth 2003, 192) It is important to understand that social-related trends require a lot of knowledge and improvement in order to actualize. That is why these three factors are introduced in this factual connection and have had a substantial impact on the growth of the sustainable investing during the recent years.

Investors have become aware of some sustainable investing strategies in relatively short period of time since the growth of this industry has been so fast. As the most popular ones have mainly become social screening, community investing and shareholder advocacy (Social Investment Forum 2006, iv-v). Social screening illustrates a practice where the investor includes or excludes companies in the investing portfolios based on their environmental and social aspects. Usually, responsible investors tend to select investments that are positively screened to their investing portfolios. Community investing, on the other hand, relates to providing financing to disadvantaged, at-risk communities and low-income housing. Finally, shareholder advocacy indicates the social investors' ability to take actions in their role. The investors in this case are able, inter alia, to take part tackling the subjects of concern and use their voices. This can relate, for example, to cooperation with the management. (Schueth 2003, 190-191)

In sustainable investing, like in investing generally, the investors may usually be divided to institutional and individual investors. Individual investors invest retail assets for example in professionally managed funds using different financiers and platforms (Global Sustainable Investment Alliance 2018, 1). In Europe, individual investors' share of the total sustainable

investors faced a nine-fold increase of 27.3 percentage points, from 3.4% to 30.7% between 2013 and 2017 (Eurosif 2018, 6). Although the share of individual investors has increased remarkably, the institutional investors, for instance pension funds and insurers, have still the dominant position in sustainable investing industry. The significance of the institutional investors' share may of course be explained especially by their enormous volume in investments and by their remarkable position in catalyzing further investments. These investors are also important factor in sharing the sustainable investment culture in the investing markets and in having an effect on its history. (Brandstetter, Lehner 2014, 19; Wood *et al* 2013, 75-94) Based on this information, we need to understand that this market is changing all the time. Therefore, it is important to focus on modifying the market to be approachable for different investors, especially for individual investors whose share is increasingly important.

1.2. Drivers of sustainable investing

The role of sustainability in investing markets has been discussed and debated in the literature covering this topic due to its two-sided substance. Besides the obvious goal to improve community value, the other main goal of sustainable investing can also be profit focused (Kooskora *et al* 2019, 472). These two very different goals motivate comprehensively investors to jump into the sustainable investing market. For instance, according to GIIN's Annual impact investor survey (2019), investors who were only focusing on responsible investing, were mostly motivated by the mission of the investment. However, those who invested into conventional investments along with sustainable investing, did not feel the mission to be the main driver for these investments. As this study shows, the investors might act very predefined and goal-oriented. In order to understand the logic behind the goals of sustainable investing, the two primary drivers will be further discussed more in this chapter.

1.2.1. Responsibility drivers

According to some definitions, part of investors can be called "impact first"-investors. These investors tend to seek markets that take part to impact creating. Impact first-investors are ready to sacrifice financial returns in part when needed in exchange for greater impact. (Monitor Institute 2013, 31) It is important for these kinds of investors that their investments perform according to their expectations and values. In order to invest on the basis of values, sustainable investors can

follow screens that are determined by different companies' responsibility and responsible acting of people who are in charge of the company. With such fundamental check that the potential portfolio investments run through, different portfolios can be divided into positive and negative screens. (Stagars 2015, 39-40)

The oldest socially responsible investing strategy relates to negative screens (Renneboog *et al* 2007, 6). Negative screens in sustainable investing cover social features and products that should be avoided (Stagars 2015, 40). Typically, negative screens can be seen to relate to initial asset pools, for instance to S&P 500 Index. These screens exclude stocks with poor performance particularly in labor relations and environmental protection and industries from fields of alcohol, tobacco, gambling, defense and nuclear power. Additionally, animal testing, abortion, pornography, workplace conditions, violation of human rights and irresponsible operations are excluded. (Renneboog *et al* 2007, 6-7) On the other hand, positive screens represent features that sustainable investors should seek. These screens can be inclusive growth and equality, high quality of co-investors, anticorruption, technology transfer and investee education (Stagars 2015, 40). Usually socially responsible investment portfolios are based on positive screens as well. In general, these screens represent environment improving, sustainability in investing, cultural diversity stimulation, corporate governance and labor relationships. The firms may also be ranked based on their positive screens. Such ranking is called "best in class"- perspective. According to this perspective, the ranking is based on comparing industry or market sector. (Renneboog *et al* 2007, 7)

Another important key feature of sustainable investing is that it uses the UN's 17 Sustainable Development Goals (SDGs) as a foundation for the impacts (Leggett 2019). These 17 goals, with their 169 different targets advice investors to deploy capital to projects that are launched to tackle global challenges. (GIIN, Pineiro *et al* 2018, 1) 17 Sustainable goals are a heart of an agenda for people and the planet in 2030. They combine a link between poverty, health and education, inequality, economic growth, climate change, and oceans and forests (Figure 1). (United Nations) In order to these goals to be achieved, they require a huge impacts and significant investments from both individual and institutional investors, and capital markets. However, positive is that already in 2017, over the half of the sustainable investors were aware of the actions of their investments against SDGs (GIIN, Pineiro *et al* 2018, 1; GIIN 2018, xiii).

Figure 1. The UN's 17 Sustainable Development Goals
Source: United Nations, Communication materials

From the financial impacts that effect on these issues, the most visible ones are generally risk and cost minimizing and reduction. When investors invest indirectly to the above-mentioned issues with sustainable investing, financial return is the matter that separates sustainable investing from traditional philanthropy distinctly. In traditional philanthropy, the return is 100% social. This means that the financing is organized wholly by the provision of grants. (OECD 2019, 9) In sustainable investing instead, the investors can invest through all the traditional financial instruments: cash (cash assets invested into banks and financial institutions that make the investment), fixed income (bonds with maturities issued by projects, governments, corporations or financial institutions), infrastructure (facilities), property (socially managed properties), private/public debt (funds borrowed) and private equity (shares in a for-profit organization) (World Economic Forum 2013, 19). Out of these instruments, the most commonly used investing instruments in public markets are private equity, real assets and private debt (Finkelman, Huntington 2017, 5).

1.2.2. Profitability drivers

Some sustainable investors can be classified as "financial first"-investors. They tend to form their ground for impacts with financial returns. These investors value subsectors that can offer market-rate returns and at the same time the investors are able to achieve social and/or environmental impacts (Monitor Institute 2013, 31). According to GIIN's Annual Impact Investor survey (2019),

66% of the participants targeted to market-rate returns, whereas 19% of the participants focused on below-market rate returns. Similarly, 15% of the participants concentrated keeping the investments closer to capital preservation. These numbers indicate that sustainable investors mainly tend to seek for risk-adjusted return from sustainable investments.

One of the under a cloud-topics of discussion relating to sustainable investing is the difference of performance between sustainable and conventional investments. Some scientists address that the return performance of these two has turned out to be the same over times and between asset classes (Rodriquez 2010, 180-188; Shank *et al* 2005, 33-46). For instance, with reference to Morgan Stanley's study (2019) about performance of sustainable funds (Figure 2), by comparing over 10 000 funds' performance as returns, net-of-fees and risks between 2004 and 2018, the volatility of these funds indicated that sustainable funds were only arithmetically more stable than conventional ones. Statistically there was no difference between total returns of these fund types. However, one finding of this study revealed that sustainable funds had significantly smaller downside deviation (risk) compared to the conventional funds.

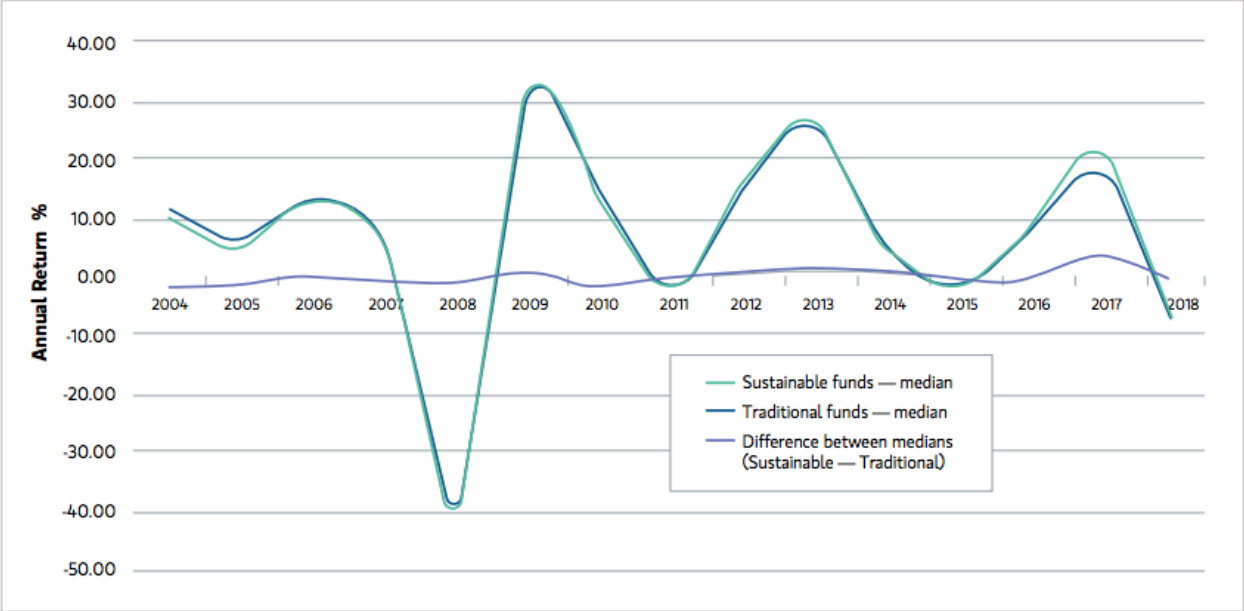


Figure 2. Volatility of both sustainable and conventional funds between 2004 and 2018
Source: Morgan Stanley (2019, 4)

Another study by Serafeim et al. (2014) conducted between 1993 and 2010 indicates correlation of performance and sustainability of 180 US companies. The research was made by comparing two sets of firms that were identical by their industry status, size, financial performance and growth

expectations. The difference was that 90 of these companies were highly sustainable by their corporate policies. The result of the study showed that these sustainable companies outperformed significantly compared to the other 90 conventional companies. Between 1993 and 2010, the value weighted portfolio of highly sustainable companies grew from one US dollar to 22 US dollars, whereas at the same time, the value weighted portfolio of the other companies grew from one US dollar to 15 US dollars. According to this study, the outperformance of the sustainable companies was found to be 4.8% annually.

However, it depends on the sustainable investment object, and many other things, whether the investment performs well or not. For sustainable investors, it is important how sustainably the company where they invest their money actually operates. According to George Serafeim (2014), "The more customers, employees, investors and local communities expect from companies to perform their functions in responsible ways the more responsible companies will be rewarded, and irresponsible companies will be punished." Likewise, when investing in sustainable funds, the performance depends on the strategy and goals of the fund. For example, Hermes Impact Opportunities Equity fund generated yearly return of 16% with a strategy of considering the United Nations' Sustainable Development Goals while making investments (Morningstar 2019). Another common feature of well performing funds is that their focus is in the long-term. This strategy reduces unnecessary volatility.

1.3. Thresholds in sustainable investing

There are certain challenges that the sustainable investing industry faces. Considering different cultures and investment goals of different investors, certain challenges in investors' opinion are seen to be stably significant. In individual investors' opinion, one of the significant challenges in sustainable investing industry is lack of appropriate capital across the risk and return perspective. This challenge is visible in this market especially as a lack of certain types of capital, for example patient capital (long-term capital) and high-risk capital. The existing risky investments in sustainable investors' opinion are for instance investments in certain sectors or geographies, investments into business models that are untested or funds that have a small track record. These high risk- investments are considered as constraints among the investors. (GIIN 2018, 12)

Another significant challenges in investors' opinion in this industry are limited liquidity and exit strategies. Namely, these challenges are seen especially as lack of functional marketplace and transactional platforms. At the moment, the meeting place for both primary and secondary markets is unavailable for different investors which after all affects to the market as need for capital. (Mendell, Barbosa 2013, 119) Moreover, one common challenge that individual investors have faced in sustainable investing markets is the lack of information and know-how that they face during the investing process. This can be seen especially as lack of appropriate infrastructure. Investors feel that they do not get enough information about the instruments and their performance. The success measurement is a hard process, especially in respect of social achievements. This could be resolved with more careful knowledge mobilization. (Mendell, Barbosa 2013, 118) Namely, the investors would be willing to read more studies and researches about real-time instructions and what to do, and what kind of options they have, for instance based on risk. Investors may also feel that the information and different definitions are sometimes too complicated to sufficiently understand the whole content. (GIIN 2018, 12)

Due to institutional investors' significance in the sustainable investing market, it is important to understand what kind of thresholds they face as well. According the World Economic Forum (2013), the first challenge is that majority of the US pension funds feel that the sustainable investing market is incomplete and niche. This relates to the gap between rate of returns that are expected and generated, limiting the intermediaries and the narrow track record of the funds. Secondly, the size of the transactions of sustainable funds is notably less than in the growth capital deals. This may lead the costs to be higher for sustainable investments. Thirdly, institutional investors feel that the investment process of sustainable investing differs a lot from the other investments processes. The challenge here is that these investors feel that it is difficult to mix these different investment allocations. As a fourth identified problem, institutional investors also feel that it is difficult to measure impact. Namely, metrics of social measurement are missing. (World Economic Forum 2013, 23-26) All of these challenges are able to be tackled with time. Since this market is still relatively young, different variables have not got modified to work seamlessly relating all of the parties.

1.4. Millennials and sustainability

It is also important to bring up age variables when talking about social behavior and sustainability. In todays impact society, age is an important feature. (Schroders 2018, 10) In this paper, the main focus is in people who are mainly millennials. This generation contains people who are born between 1982 and 2002. Since over the half of the population in the world are currently under 30 and the global workforce will be soon represented for the most part by this group of people, it is important to focus on their values, opinions and concerns about sustainable development and actions contributing it. (World Economic Forum 2017, 6; McManus Warnell 2015, 4-5) Millennials, as a generation, are very different than the earlier generations. This group of people is ethnically more diverse, educated and affluent. (Howe, Strauss 2000, 4). This generation is also used to work with technology and social media which makes them more aware of global issues than the previous generations. This is part of the reason why millennials have said to be increasingly aware about sustainable issues. (McManus Warnell 2015, 5)

There are certain grievances with respect to the global societal phenomena that millennials as a generation notice to be the most significant and concerning. The Deloitte Global Millennial Survey 2019 asked millennials what their biggest concerns about global societal challenges were. From 20 different challenges, the most concerned the participants were about environment protection and climate change. (Deloitte 2019, 6) Moreover, World Economic Forum's Global Shapers Survey (2017) indicated that millennials had considered climate change as the most serious issue. As figure 3 indicates, other concerns that millennials face regarding societal issues are income inequality as distribution of wealth, unemployment, crime as personal safety, corruption, terrorism, and political instability as wars and conflicts (Deloitte 2019, 6). Especially, out of these issues as the other top serious issues that millennials face and feel are large scale conflicts and inequality (World Economic Forum 2017, 15).

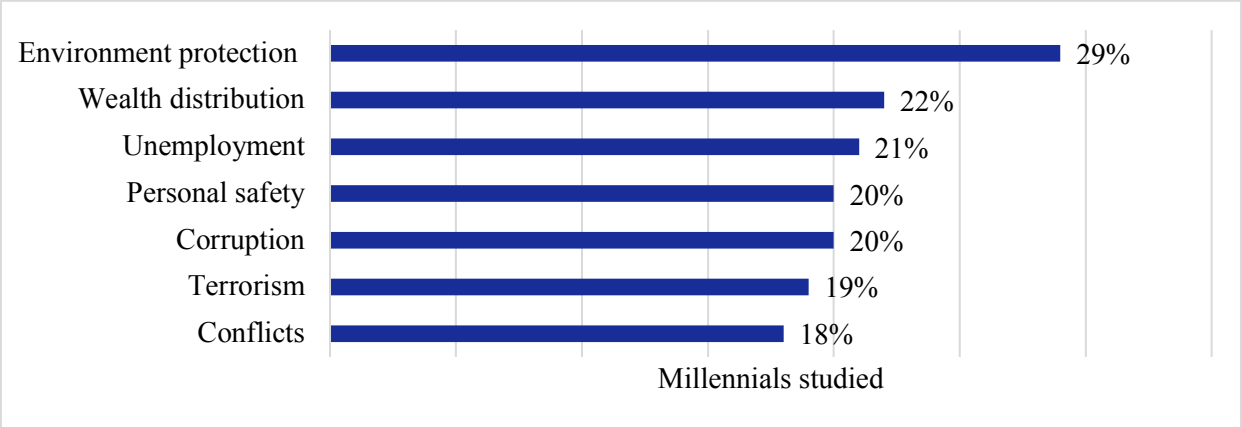


Figure 3. Millennials' biggest concerns about global societal challenges
Source: Deloitte (2019, 6)

Different studies about millennials' actions against global societal challenges are contradictory. According to Schroders' Global Investor Study (2018) (see Figure 4), people aged between 18 and 44 are more likely to care about their environmental footprint in their everyday decisions than people in age of 45 or more. From this outcome we can indicate that values of younger age groups might be more responsible than values of older ones. However, when the groups are compared based on their actions, the outcome is quite different. The same study indicates that actually older people tend to recycle more than younger people in their households. When it comes to interest in investing in sustainable instruments according to this study, again the age group of 25-34 was above other groups when they were asked if they would invest in sustainable investing instruments rather than in unsustainable ones. (Schroders 2018, 10) If we compare this outcome to the studies about millennials and global societal challenges made by Deloitte (2019), only 40% of the studied people who are considered to be a millennial and highly educated, would believe that business leaders manage their companies according to sustainable values. What could be interpreted from these studies is that there might appear lack of confidence in the credibility of companies' practices to deal with sustainability.

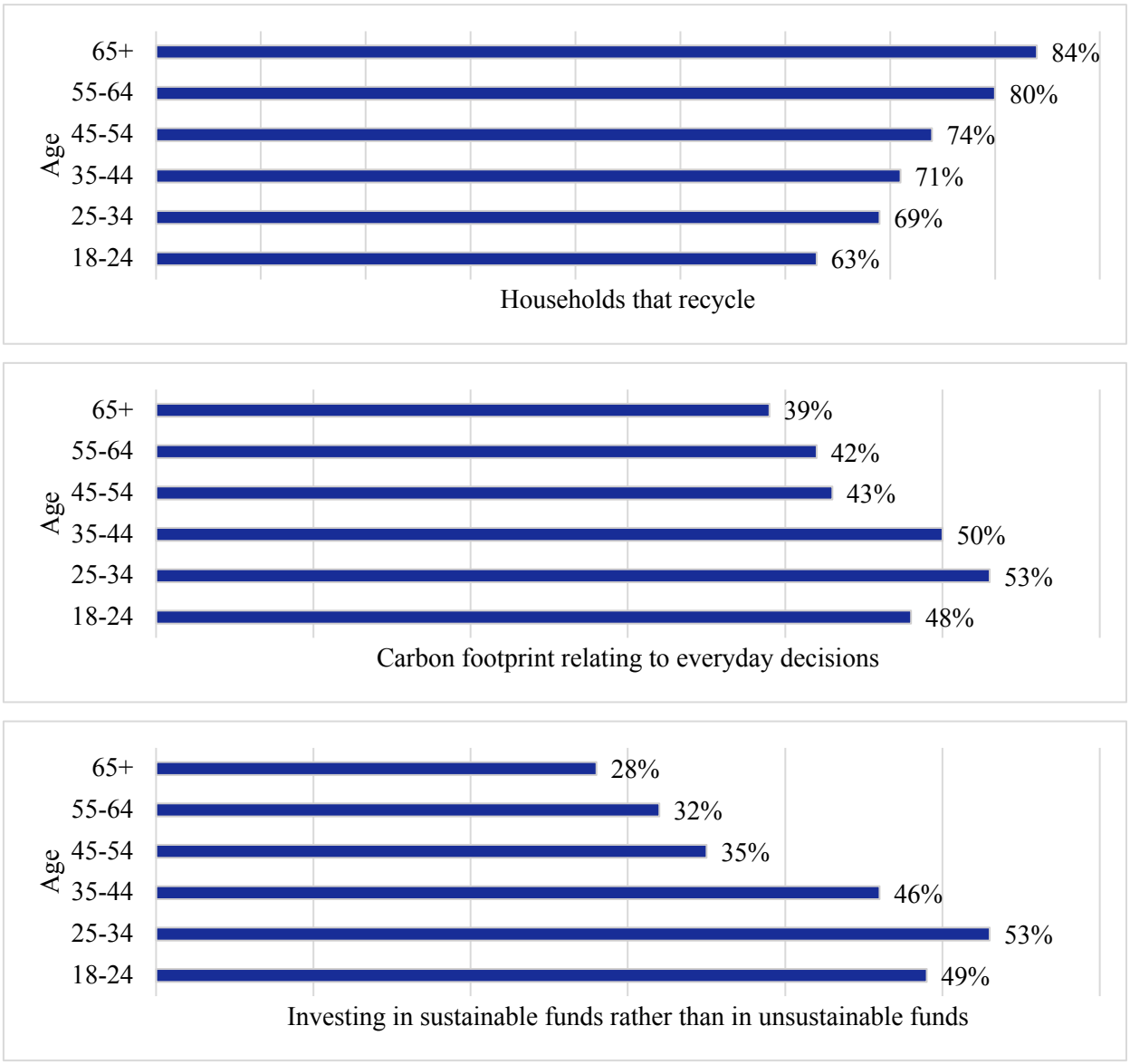


Figure 4. Differences of sustainable values and actions between age groups
Source: Schroders (2018, 10)

2. METHODOLOGY

2.1. Data

The data for the research was collected with an online questionnaire. Since some of the questions were personal and sensitive, the survey was created to collect the data anonymously. When the questions were planned carefully to support certain research questions, the anonymousness was guaranteed with a setting in Google Forms. Google Forms was selected to be the online survey tool because it is free and easy to use in every platform. The author wanted the questionnaire to be easily understood by and attractive to the participants.

The data used in the research was obtained from none-representative sample, with volunteer sampling. Volunteer sample is a group of studied individuals from the population who have self-selected to be part of giving data for a research (Burt *et al* 2009, 262). This sampling method was selected because it is easier to reach individuals based on voluntariness when the answers are aimed to be collected anonymously.

The sample was composed of the author's social media connections and people who randomly reached the update via shares and likes. Since the research studies sustainable investment behavior of different investors, the sample was expected to cover multiple age groups, investment goals and different kinds of distributions of portfolio selection when investing in sustainable way. The goal was to collect a sample of 100 or above so the data would be unbiased and diversified. Overall, the survey was completed by 115 individuals of which two were dropped due to missing values in key variables of interest. This made the number of observations equal to 113. However, the network where the survey was shared is consisted mainly of people under 30-years-old which lead the age distribution of the answerers to be skewed

2.2. Variables

The survey was created to cover as much exploratory information as possible but at the same time to be short enough, so that the participants would be discouraged to complete it. It included 11 comprehensive questions, and roughly, the first four questions were socio-economic, by asking age, gender, education and income of the participant. The last seven questions focused onto deeper information about the depth of knowledge, satisfaction of the subsistence of living, investment behavior and goals in investing, especially from sustainable point of view.

The dependent variable in this study, ESG related investments, was measured with the help of two proxies. First, respondents were asked if they invested in sustainable investments. Overall 61% of the participants had invested in one or more type of sustainable investment instruments. Among the people who had invested, the most popular ones were mutual fund or ETF (36.5%) and stocks (37.4%), and the least popular investment instrument was a project (4.3%). Also, 9.6% of the participants had invested in bonds, 13% in property and 7% to other types of instruments. Secondly, respondents were asked about the share of sustainable investments in their total investment portfolio. The share of sustainable investments in the investor's total investment portfolio for those 61% who had invested in sustainable investments was highly disperse and ranged between 10-100%. However, if we take all the participants into consideration, the mean share of sustainable investments from the total investment portfolio totaled 30% and median 20%.

The set of socio-economic characteristics included age, gender, education and income level of the participant. As mentioned above, the data was skewed to younger respondents. 13% of the participants were 22-years-old, 29.6% were 23-years-old and 18.3% were 24-years-old. However, the mean age was 27 that was composed of different aged participants, between the youngest participant of 18-years-old and the oldest participant of 60-years-old. Therefore, by organizing the participants to different age groups, we can interpret their investing behavior more closely. The Figure 5 presents the means and confidence intervals of sustainable investing and share of sustainable investments from the total portfolio of age groups below 25, from 26 to 30, from 31 to 35, from 36 to 40, and above 41. From both of the figures we can interpret that all the groups were intersect with each other. Namely, the means for each group were not statistically different from each other.

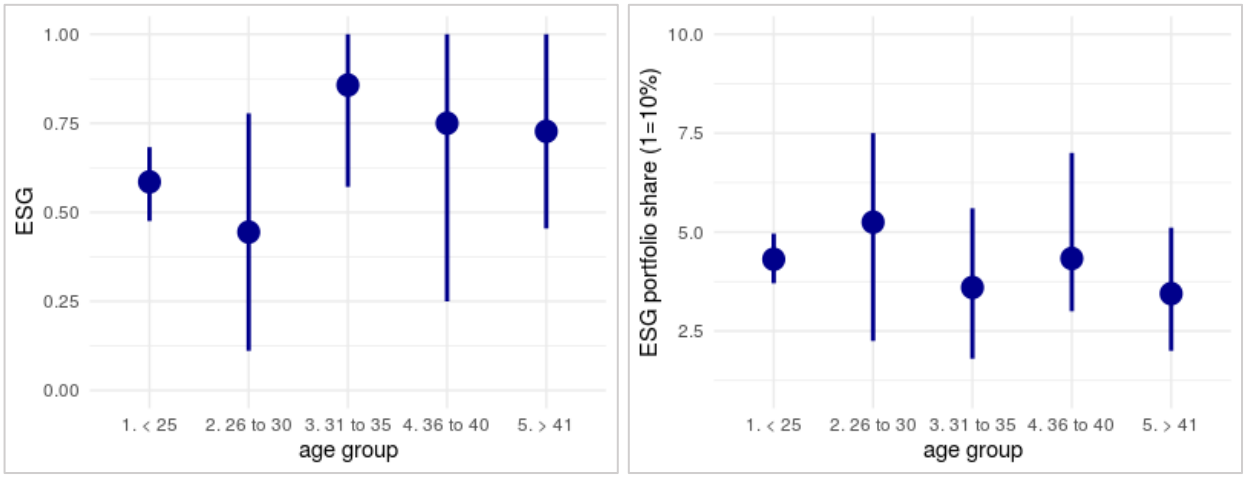


Figure 5. Means (points) and confidence intervals (bars) of different age groups' sustainable investing and share of sustainable investments from the total portfolio
Source: Author's calculations based on data from the questionnaire (appendix 1)

The sample of this study was not only relatively young but also highly educated. Since the majority of the author's social media connections are highly educated, the percentage of higher educated participants was 82.6%. The rest of the participants were mainly secondary education graduates. Given that the mean age of the participants was 27, it is rather expected that between scale of one to ten, the mean income of the participants' household would not be high. However, the mean was five, and so was the median. The participants were rather satisfied with their financial situation, with mean response of six out of ten. If it is assumed that most of the participants might be still studying due to their young age, and not be able to work full-time, their financial situation was comparably good. Also, the majority participants (66.4%) classified themselves as female.

The participants were also asked about the level of their ESG and financial knowledge. As can be seen from the Table 1, the minimum level of ESG awareness was three out of ten and the minimum of financial awareness was one; their medians turned out to be the same and equal to seven. The skewness to the right of distributions of both respondents' awareness of environmental, social and governmental issues, and financial matters are figured in Figure 6. If we look at the standard deviations of these two variables, we can see that they are very close to each other (see Table 1), however participants' financial awareness more distributed. The means were also seven out of ten for both of the outcomes.

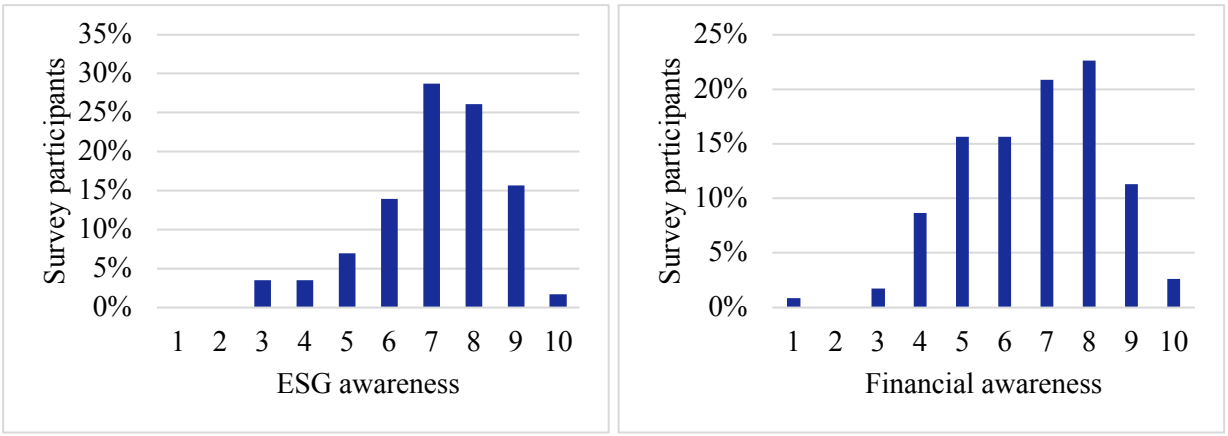
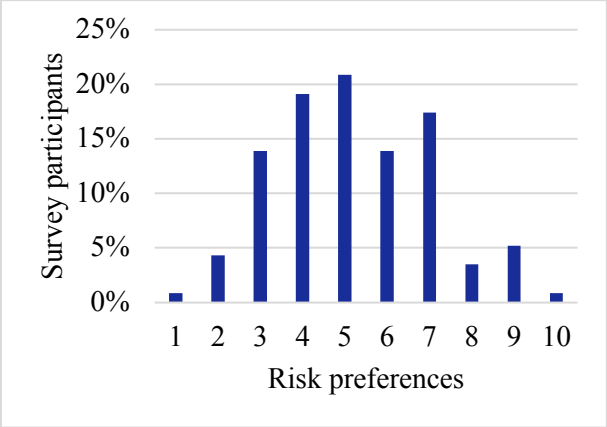


Figure 6. Participants' awareness of ESG issues and general financial knowledge
Source: Author's calculations based on data from the questionnaire (appendix 1)

In addition to socio-economic characteristics, respondents were asked about their values and motivations in investing into sustainable investments. Since investors can be driven by a variety of different motivations, it was important to distinguish if investors are looking for the impact or simply higher returns. The questionnaire contained a single-item question about respondents' risk preferences when investing in generally. Risk seeking attitudes were measured on a scale from one to ten, where higher vale corresponds to higher risk appetite. Interestingly, the mean of this variable indicated that the average respondent in the sample is risk neutral (not risk seeking and not risk averse) as both mean and the median were equal to five.

Finally, the respondents were asked to consider that they think of investing in an organization that strives for sustainability. Then, they were asked to provide an answer on a scale from one to ten, of what they value in such a case: sustainability (1) or high returns that can be associated with sustainable investments (10). The mean of five, indicated that the participants were possibly as interested in looking for sustainability from their investments as potential higher returns compared to conventional investment instruments. In this case, the median was also five. The distributions of both participants' answers of sustainability versus return emphasizing and risk preferences are figured in Figure 7.



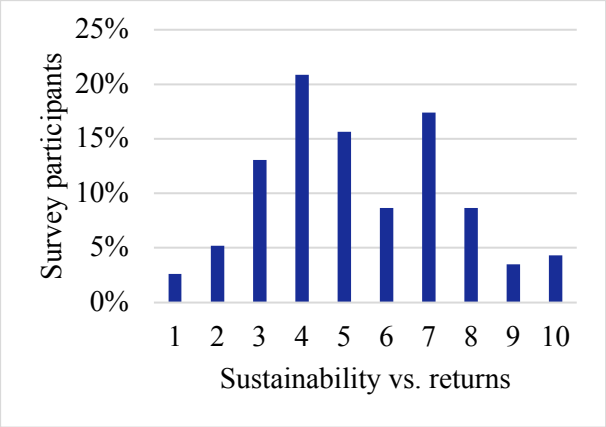


Figure 7. Participants' risk preferences and sustainability versus return emphasizing
Source: Author's calculations based on data from the questionnaire (appendix 1)

Table 1. Descriptive statistics

Variable	Mean	Median	St.Dev.	Min	Max	N
Dependent variables:						
Investing in sustainable investments	0.61	1	0.5	0	1	113
Sustainable investment portfolio share (1=10%)	2.68	2	2.8	0	10	113
Socio-economic characteristics:						
Age	27.1	24	8.5	18	60	113
Gender	0.66	1	0.5	0	1	113
Education	2.86	3	0.4	2	4	113
Income scale	5.02	5	2.2	1	10	113
Income satisfaction	6.33	7	2.3	1	10	113
Knowledge, preferences, values:						
ESG awareness	7.08	7	1.5	3	10	113
Financial awareness	6.67	7	1.7	1	10	113
Risk preferences	5.20	5	1.9	1	10	113
Sustainability vs returns	5.34	5	2.1	1	10	113

Source: Author's calculations based on data from the questionnaire (appendix 1)

2.3. Method and regression specification

Different research methods can be divided based on the approaches they use. The most common ones are quantitative research method and qualitative research method. In this paper, quantitative research method is selected to carry the analysis. This method is based on numerical data which means that the measurement is controlled. Furthermore, it explains effectiveness with statistical analyses and tests (Hagan 2014, 431). Analysis method however that is run, is regression analysis. In general, regression analysis is widely used technique that indicates relationships between sets of variables, independent variables and a dependent variable. The practicality of regression analysis suits statistical theory and underlying mathematics, which makes it a multi-function analysis method. (Montgomery *et al* 2012, xiii)

Distinctly, the regression analyses that the research run in this paper, are called logistic regression and linear regression (more closely OLS regression). In general, logistic regression as a method is used to analyze, whether one or more independent variables associate with the dependent variable. The binary response of the model in this case is 1 or 0, yes or no and so on, based on set of different independent variables. Along with the terms taking values of 1 and 0, the variance will be volatile. The fitted value in this case represents a probability of 0 or the most possible prediction. (Hilbe 2009, 2) In this paper, logistic regression is mainly used to analyze the association of different variables in investor's decision, whether or not to invest in sustainable investments.

Linear regression (in this paper OLS regression) is used to obtain estimates of parameters as well. This regression model assumes a straight-line relationship of varying variables, independent variables and a dependent variable. As an important part of this model, statistical error is used to account the difference between observed data and the expected value, as uncertainty. The errors depend on unknown parameters and are random. Namely, the errors correspond to the vertical distance of different points and mean function. (Weisberg 2014, 21-23) In this paper, linear regression is mainly used to analyze the association of different variables with the share of sustainable investments in the investor's total investment portfolio. Linear regression and logistic regression differ mainly by their dependent variables. As already mentioned, the dependent variable of logistic regression is binary and in linear regression it is continuous.

3. RESULTS

3.1. Descriptive analysis

Table 2 indicates that from all of the classified age groups (below 30, below 25, from 26 to 30, from 31 to 35, from 36 to 40, and above 41), age group of people from 31 to 35, was the most active in investing into sustainable investments, 86% of people in this group had invested. Whereas, people aged from 26 to 30 were the less active in sustainable investing. From this group, only 44% had invested. Another interesting fact that can be seen from the Table 2 is that the average share of sustainable investments in the investor's total investing portfolio for all of the age groups was between 23% and 33%, the smallest however for the age group of 26 to 30, and the highest for the age group of 36 to 40. The shares of all the age groups out of the total participants are collected to the last row. As already mentioned, a lot of people in the studied group were relatively young. Out of all the participants, 73% were under 25 years-old, whereas only 10% of the participants were above 41 years-old.

Table 2. Classified age groups and sustainable investing

	Age <= 30	Age <= 25	Age 26-30	Age 31-35	Age 36-40	Age >= 41
% who have invested in sustainable investments	57 %	59 %	44 %	86 %	75 %	73 %
Average sustainable investment share	26 %	27 %	23 %	26 %	33 %	28 %
Coverage of total participants	81 %	73 %	6 %	6 %	4 %	10 %

Source: Author's calculations based on data from the questionnaire (Appendix 1)

3.2. Regression results

Since sustainable investing was measured with two different types of variables, of which one was binary, and another was continuous, two different regression analyses were used in this research. Logistic regression was used with decision to invest into sustainable investments as a binary dependent variable, and OLS regression was used with sustainable investment portfolio share as a continuous dependent variable. Since variable ESG portfolio share might measure sustainable investing less precisely due to the errors that respondents can make when answering question about portfolio share versus by answering a simple yes/no-type question, logistic regression was considered to be the main analysis and OLS regression analysis as additional one. In this research, the analysis tool used to run the regressions was Gretl.

For logistic regression Models 1.1-1.5 (Table 3), the independent variables selected were relating to age, particularly to age groups. The different variables selected were age of the participant, age squared (to have an information about U-shaped relationship), age below 30, age below 25, age from 26 to 30, age from 31 to 35, age from 36 to 40, and age above 41. With these independent variables in Models 1.1-1.5, the regression was run with an additional control variable, gender. In the rest of two regression Models (Table 4 and Table 5), only two alternative proxies of age were used, age and age below 30 (which turned out to be significant in logistic regression, Model 1.3). In addition, these following Models included the full set of relevant independent variables such as education, income scale and income satisfaction, both ESG and financial awareness, risk preferences and sustainability versus return emphasizing. The tables with regression results contain coefficients (odds ratios coefficients in logistic regression), standard errors in the brackets and p-values as stars, as the outcome of the regressions.

First, the association between decision to invest in sustainable investments, and age was investigated. The Model 1.1 indicates that age, in general, received an odds ratio coefficient of 1.032. This means that there is a 3.2% increase in probability to invest in sustainable investments for every additional year of age. However, since the coefficient was not statistically significant, this coefficient cannot be interpreted. Odds ratio coefficient of age squared (Model 1.2) was also not statistically significant. The result remained the same when age and age squared were used in the same regression simultaneously. Relating to the next age group (under 30 years-old, Model

1.3), the odds ratio coefficient received a value which was under one. This means that as this value is 0.324, being under 30 reduces probability to invest in sustainable investments by 67.6% (1-0.324). The result is significant since this variable received a p-value which was less than 0.01 (**) and therefore, can be trusted. Model 1.4, which also used a binary variable as a proxy for age (equal 1 if age is below 25), shows that age was not statistically significant. Model 1.5 shows results for more narrow age groups. Only coefficient for age group from 31 to 35 was statistically significant but with p-value of less than 0.05 (*). Being of this age increases the probability to invest in sustainable investments by 611% (7.111-1) when comparing to the reference group (age below 26). Based on the Models 1.3 and 1.5, it appeared that using binary variable age below 30 (when investigating the link between gender and sustainable investments) for further models was for the best since it was the most significant.

Table 3. Logistic regression results: effect of an age

	Dependent variable: Investing in sustainable investments				
	Model 1.1	Model 1.2	Model 1.3	Model 1.4	Model 1.5
Gender	**0.227*** **	**0.228*** **	**0.210*** **	**0.216*** **	**0.202*** **
	(0.11)	**(0.11)**	**(0.10)**	**(0.11)**	**(0.10)**
Age	**1.032**				
	(0.03)				
Age^2		**1.000**			
		(0.00)			
Age, below 30			**0.324** **		
			(0.19)		
Age, below 25				**0.554**	
				(0.26)	
Age, 26-30					**0.670**
					(0.50)
Age, 31-35					**7.111***
					(7.92)
Age, 36-40					**2.687**
					(3.26)
Age, above 41					**1.772**
					(1.33)
Observations	113	113	113	113	113
McFadden pseudo R2	11.3%	7.9%	10.0%	8.2%	11.1%
McFadden pseudo R2 Adj.	4.7%	3.9%	6.0%	4.3%	3.1%

Source: Author's calculations based on data from the questionnaire (Appendix 1)

In the Table 4, the results of regression consisting of full set of independent variables are given. In these Models (2.1-2.4) investing to sustainable investments is still the dependent variable. As can be seen from the Models 2.1 and 2.2, the coefficient for age as continuous variable remained

not statistically significant (as in Model 1.1 with no additional controls). Further, according to the Models 2.3 and 2.4, the coefficient for binary variable age below 30 (which was statistically significant in Model 1.3) was not statistically significant anymore.

The values of gender variable from the logistic regression are also interesting to us. As we are interested in how gender and investing decision to sustainable investments are associating, the results of Models 1.1-1.5 and 2.1-2.4 were used again in the interpretation. In these logistic regression Models, female was set to be one and male was set to be zero. From the Models 1.1-1.5 can be seen that the coefficients of gender variable were very close to each other. In each of these Models, the coefficients were under one, which means that there is a negative relationship with gender (i.e., being a female) and decision to invest in sustainable investments. Relating to Models 1.1-1.5, we can interpret that being a female reduces probability to invest in sustainable investments by 77.2% to 79.8%. On the other hand, in the Models 2.1-2.4 with the additional controls, the coefficients for gender variable became even smaller. This means that the negative association between gender and sustainable investing was stronger than short Models 1.1-1.5 imply. All of the values were very significant for gender since the p-value for each Model was less than 0.001 (***).

The results of the Models 2.1-2.4 indicate that any of the coefficients for education was not statistically significant. Given that the sample had not many observations, the fact that education variable did not have enough variation might explain the results that are obtained from the regression analysis. At the same time, one of the two proxies of income were statistically significant (income scale). Here, as might be expected, the effect of income in the likelihood of having invested in sustainable investments was positive. Finally, the coefficient estimates for neither ESG awareness nor broader financial awareness were statistically significant. Also, neither risk preferences nor valuing sustainability explain the probability to invest in sustainable investments.

Table 4. Logistic regression results: full Models

	Dependent variable: Investing in sustainable investments			
	Model 2.1	Model 2.2	Model 2.3	Model 2.4
Gender	**0.187*** **	**0.166*** **	**0.178*** **	**0.161*** **
	(0.10)	**(0.10)**	**(0.09)**	**(0.09)**
Age	**1.004**	**0.999**		
	(0.03)	**(0.03)**		
Age, below 30			**0.485**	**0.552**
			(0.31)	**(0.36)**
Education	0.398	0.375	0.416	0.397
	(0.25)	(0.24)	(0.26)	(0.25)
Income scale	1.313**	1.404**	1.245*	1.327**
	(0.17)	(0.20)	(0.16)	(0.19)
Income satisfaction	0.880	0.869	0.885	0.871
	(0.10)	(0.10)	(0.10)	(0.10)
ESG awareness		**0.927**		**0.929**
		(0.15)		**(0.15)**
Financial awareness		1.063		1.072
		(0.16)		(0.16)
Risk		1.046		1.033
		(0.14)		(0.14)
Sustainability vs returns		0.830		0.845
		(0.10)		(0.10)
Observations	113	113	113	113
McFadden pseudo R2	12.2%	13.9%	13.1%	14.5%
McFadden pseudo R2 Adj.	4.3%	0.7%	5.1%	1.2%

Source: Author's calculations based on data from the questionnaire (Appendix 1)

We are also interested in how ESG awareness is associating with the share of sustainable investments the investor has in their investing portfolio. To interpret this relationship, OLS regression was used. When it comes to the Models 3.1-3.4, the dependent variable was the share of sustainable investments from the investing portfolio. Somewhat unexpectedly, the variable ESG awareness was not statistically significant in OLS regression. For instance, in the Model 3.1 where we consider gender, age, education and income level as independent variables beside ESG awareness, the coefficient of ESG awareness received a value of 0.054 and standard error of 0.18, This implies that the confidence interval for this coefficient was between lower bound -0.30 (≈ 0.054-0.18x1.96) and upper bound 0.41 (≈ 0.054+0.18x1.96). Therefore, we cannot even be sure that the association between ESG awareness and sustainable investment portfolio share is positive or negative.

Table 5. Linear regression: effect of ESG awareness

	Dependent variable: Portfolio share of sustainable investments			
	Model 3.1	Model 3.2	Model 3.3	Model 3.4
Gender	-1.054*	-1.315**	-1.049	-1.283**
	(0.55)	(0.61)	(0.57)	(0.61)
Age	**-0.028**	**-0.036**		
	(0.04)	**(0.04)**		
Age, below 30			**0.234**	**0.390**
			(0.76)	**(0.79)**
Education	-0.562	-0.843	-0.481	-0.738
	(0.73)	(0.75)	(0.72)	(0.75)
Income scale	0.190**	0.350**	0.162	0.315*
	(0.14)	(0.17)	(0.14)	(0.18)
Income satisfaction		-0.221		-0.221
		(0.14)		(0.14)
ESG awareness	**0.054**	**0.071**	**0.047**	**0.063**
	(0.18)	**(0.20)**	**(0.18)**	**(0.20)**
Financial awareness		0.043		0.054
		(0.19)		(0.19)
Risk		-0.122		-0.123
		(0.17)		(0.17)
Sustainability vs returns		-0.098		-0.085
		(0.14)		(0.14)
Constant	3.275**	5.231**	2.451	3.941*
	(1.64)	(2.16)	(1.79)	(2.11)
Observations	113	113	113	113
R2	5.6%	8.9%	5.2%	8.2%
Adjusted R2	1.2%	0.9%	0.7%	0.2%

Source: Author's calculations based on data from the questionnaire (Appendix 1)

3.3. Discussion

The main goal of the research was to find out how age, gender, and ESG awareness have influence on decision to invest in investments that are considered sustainable. Since the latter was measured as having sustainable investment (binary outcome variable) and the share of portfolio invested in sustainable investments (continuous outcome variable), the study used two different regressions, logistic and OLS. The effect of all three variables of interest was studied with both regressions. However, the most convenient way to study this was to focus on associations between age and sustainable investing decision, gender and sustainable investing decision, and ESG awareness and portfolio share of sustainable investments. The first two associations were studied with logistic

regression and the last association with OLS regression. The results generated answer for only one research question which became apparent by running the regressions with several sets of variables.

As the descriptive analysis indicated, from all the age groups that were consisted of participants under 30 years-old, 44%-59% had invested in sustainable investments. Whereas, 73%-86% of the participants from age groups above 30-years-old had invested in sustainable investments. In order to interpret the association of age and sustainable investing decision while understanding the skewness of age of the participants, we cannot make any conclusions from descriptive analysis. When it comes to the results of logistic regression, Models 1.3 and 1.5 were the only ones that addressed statistical significance regarding this association. These Models indicated that being under 30-years-old reduces probability to invest in sustainable investments and also that being aged from 31 to 35 increases the probability to invest in sustainable investments. However, it is unlikely that there is something special about this particular age group (31-35) to justify so large increase in likelihood of having sustainable investments.

These results would indicate that younger people have lower likelihood of having sustainable investments. But, as the other Models of logistic regression indicated (Table 3 and Table 4), coefficients of the other age groups were not significant, and when the significant age groups were used again in another Models (Table 4 and Table 5), they lost their significance. Not finding any certain result showed that age is not a predictor of sustainable investing as its association with sustainable investing decision was not statistically significant. Previous studies however disagree with this conclusion. For instance, Schroders (2018) has studied different age groups' behavior relating to sustainable investing. The studies indicate that 46%-53% of people between ages 18-44 would invest rather sustainable funds than unsustainable funds. At the same time, only 28%-35% of the people aged 45 above would. The difference is enormous. In another study, made by Morgan Stanley (2017) between 2015 and 2017, the general population and millennials were asked about their sustainable investing interests. In 2015, 52% of the general population and 56% of the millennials were somewhat interested in sustainable investing, when at the same time, 19% of the general population and 28% of the millennials were very interested in sustainable investing. However, after two years, general population being very interested had grown by 4%-points and for millennials, the growth was 10%-points. In general, results in the literature are unclear which tells that it is not a total surprise that age is not statistically significant according to the results of this research. Also, a rather small number of observations can affect distortion in the results.

As already brought forth, almost 67% of the participants were females. This however does not tell anything about studied individuals and their habits. So, by interpreting the results of logistic regression, each Model that represented different sets of variables indicated that effect of gender variable and decision to invest in sustainable investments was statistically significant and negative (where gender was a binary variable equal to one if a respondent was female). Based on this outcome, we can tell that men are more active in investing into sustainable investments than women. This is quite surprising because several studies show that women's values may be deemed more sustainable. According to the study provided by Mintel (2018), under 60% of British men focus on sustainable habits in their everyday life, compared over 70% of women. Another study made by Morgan Stanley (2017) in 2015-2017 suggest that women are actually more interested in sustainable investing than men. In 2015, 78% of the woman-examinees were interested in sustainable investing, whereas in the same year only 62% of men. In 2017 already 84% of the women were interested, and 67% of the men. Women's tendency to invest in principle less than men is however already detected in literature. There are many studies that have found that women hold portfolios that are smaller than portfolios held by men. (e.g. Barber, Odean 2001, 275). This may be one reason that even women might be more interested in sustainability and matters relating to it, their financial actions are separate.

It is said, that amount of information walks hand-in-hand with the scope of responsibility (Schueth 2003, 192). As almost 83% of the participants consider themselves as highly-educated, would be expected that most of the participants have high ESG awareness as well. However, as the results of logistic regression indicated, neither the coefficient of education nor ESG awareness was significant when it comes to investing in sustainable investments. Given that the sample had not many observations, and the fact that education variable did not have enough variation might explain the results that were obtained from the regression analysis. As the results of linear regression showed, ESG awareness was not significant in any of the Models where portfolio share of sustainable investments in investor's total investing portfolio was set to be the dependent variable. In this study, the sample size being so small might be the reason why there were no significant coefficients relating to this association. Might be also that people with better ESG awareness invest in sustainable investments not because of the awareness itself but due to their higher income. However, in reality there may be association between understanding in ESG and the share of sustainable investments in the investing portfolio.

To conclude, it is not straight forward that people in certain age or gender invest more in sustainable investments. It is also not unambiguous that people with certain level of understanding in environmental, social and governmental issues would select more or less sustainable investments into their investment portfolio. However, with volunteer sampling and small sample size, there is always a risk of the data being skewed. That is why it is always important to doubt researches based on questionnaires carried out by volunteer sampling.

CONCLUSION

The previous studies relating to sustainable investing cover SRI, ESG, impact investing and its other dimensions. The author has taken note that these studies mainly concentrate on people's values and objectives regarding sustainable development and the state of being environmentally friendly now and in the future, and financial performance of the sustainable investments. But not however sufficiently the real action of sustainable investing behavior. Due to the little showing about features of sustainable investors and their behavior in this industry, the aim of this research was formed to study how age, gender and ESG awareness are affecting on sustainable investing decision making, by answering to three following research questions:

1. Is the sustainable investing market run by young investors?
2. Are women more active in case of investing in sustainable investments than men?
3. Is awareness of environmental, sustainable and governmental issues associating positively with the share of sustainable investments of investor's total investing portfolio?

The research questions were determined with respect to presumptions and previous studies relating to sustainable development. Along with finding answers to the missing questions in sustainable investing industry, the author wanted to investigate if there are similarities between sustainable values and investing behavior. For the first and third question, clear results were not found. However, for the second question, a significant and quite surprising result was found.

The research was carried out by first collecting the data with an online questionnaire. The data used in the research was obtained from none-representative sample in social media. Since sustainable investing was measured with two different types of variables, of which one was binary, and another was continuous, two different regression analyses were used in this research. Logistic regression was used with decision to invest into sustainable investments as a binary dependent variable, and OLS regression was used with sustainable investment portfolio share as a dependent variable. In this research, logistic regression was considered to be the main analysis and OLS regression analysis as additional. The analysis tool used to run the regressions was Gretl.

As already mentioned, the study found clear answer for only the second question concerning the association of gender and sustainable investing behavior. To interpret the outcome of logistic regression, the first Models including only age groups and gender as independent variables and investing in sustainable investments as dependent variable suggested that considering the statistical significance, being under 30-years-old reduces probability to invest in sustainable investments and also that being aged from 31 to 35 increases the probability to invest in sustainable investments. However, when the significant age groups were used again in full Models, they lost their significance. Not finding any certain result showed that age is not a predictor of sustainable investing as its association with sustainable investing decision was not statistically significant.

Another unexpected outcome concerned the third question, the association of ESG awareness and the share of sustainable investments in the investing portfolio. As the results of linear regression showed, ESG awareness was not significant in any of the Models where portfolio share of sustainable investments in investor's total investing portfolio was used as the dependent variable. However, very significant results were found considering the second research question. Even almost 67% of the participants were females, each logistic regression Model representing different sets of variables indicated that effect of gender variable and decision to invest in sustainable investments was statistically significant and negative (where gender was a binary variable equal to one if a respondent was female). Based on this outcome, we can tell that men are more active in investing into sustainable investments than women. This is quite surprising because several studies show that women's values may be deemed more sustainable.

What was acquired from this research was that to receive more productive outcome, it is important to collect diversified and large sample in its quantitative. In this study, the sample size being so small might have been the reason why there were no significant coefficients relating to certain associations, which led that clear results were not found for important research questions. For the future, it would be accurate to study the same associations with larger and more distributed sample. Also, in order to understand more about the investors' behavior, would be useful to study more about the different investing strategies that the sustainable investors follow. Understanding the strategic behavior could explain many other problems relating to sustainable investing preferences and activity.

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APPENDICES

Appendix 1. Questionnaire

1. Age of the participant: *

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2. Gender of the participant (voluntary):
   - 1. Female
   - 2. Male
   - 3. Other

3. Education of the participant: *
   - 1. Comprehensive School
   - 2. Secondary Education
   - 3. Higher Education
   - 4. Other

4. On the scale of 1 to 10, you would describe the income of your household as: *
   Low income - 1 2 3 4 5 6 7 8 9 10 - High income

5. How satisfied are you with the financial situation of your household? *
   Not satisfied - 1 2 3 4 5 6 7 8 9 10 - Completely satisfied

6. How aware are you of environmental, social and governmental issues? *
   Not aware at all - 1 2 3 4 5 6 7 8 9 10 - I am a specialist

7. How broad is your financial awareness? *
   Limited - 1 2 3 4 5 6 7 8 9 10 - I am a specialist

8. In what type(s) of impact/sustainable investment instrument(s) have you invested money? *
   - ☐ 1. Mutual Fund and ETF
   - ☐ 2. Bond
   - ☐ 3. Stocks
   - ☐ 4. Project
   - ☐ 5. Property

- 6. Other
- 7. I do not have sustainable investments

9. What is the proportion of sustainable investments in your investment portfolio? *
   0% - 0 1 2 3 4 5 6 7 8 9 10 – 100%

10. In investing, you are looking for: *
    Low returns but virtually no risk – 1 2 3 4 5 6 7 8 9 10 – A high risk in order to achieve the highest possible returns

11. Consider that you are thinking of investing in an organization that strives for sustainability. In such case you value: *
    Sustainability – 1 2 3 4 5 6 7 8 9 10 – Potential higher returns compared to conventional investment instruments

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To the rector's directive no 60 of 27 February 2014

I, Valentiina Repka

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