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THE EFFECT OF SOCIO-DEMOGRAPHICS AND FINANCIAL LITERACY FOR INDIVIDUAL'S INVESTMENT STRATEGY

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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 8195 words from the introduction to the end of conclusion.

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ABSTRACT

Anecdotal evidence suggests that individual investors increasingly shift their allegiances from traditional asset classes such as stocks and bonds towards a wide range of alternative assets such as equity crowdfunding and cryptocurrency. At the same time, empirical literature yet to pay attention to the factors that explain what predicts the investors' asset preferences. Using survey evidence, this study investigates if the relationship between financial literacy and the investor's experience on the one hand and the preferences between traditional versus alternative assets on the other. The results show that different aspects of financial literacy indeed have an association with investor's asset preferences. I also find a weak evidence that investor's experience has a negative association with preferences for traditional assets.

Keywords: Financial literacy, Investment decision, Investment type, financial behavior, financial decision making

INTRODUCTION

Investment is to make a certain level of benefits, income flow, or capital gain in the future, it is a commitment and involves a certain amount of capital. The emerging economy with rapid changes and constant development in various sectors including the financial sector is beneficial for society to choose the assets to invest in. The influence of advanced technology also gives access for people to choose financial products through various platforms both online and offline.

The financial market changed drastically over the past decades. In this century people just need to download the application to purchase stocks or exchange commodities or foreign currencies. Besides the physical forms, each individual can choose to purchase, hold or sell most assets in digital forms. Besides the easy way to start the investment, the asset choices become more complex and diverse.

Through those constant developments, society was flooded by loads of information about investments and their possibility of asset returns. To achieve financial well-being, each individual needs to plan their financial activities including taking effective loans, mortgage, or correct investment plans.

In recent years, the study of financial behavior based on the socio-demographics background was heavily researched mostly focused on the gender factor and the investment type mostly focusing on the retirement plan and few about mutual funds. In terms of financial literacy - globally the financial literacy is considered as very low (Lusardi and Mitchell, 2014). No matter the pension provision's type and the change in the financial market does not mean improvement in the individuals' financial knowledge since the knowledge is limited to their own experience. Women also reportedly have less financial literacy than men, as well they are aware of it. In terms of age, the older population is considered as a vulnerable group and having lower levels of financial literacy.

This research will try to shorten the gap between previous research and focusing on the differences between individual backgrounds on the investment behavior and products chosen. The individual's backgrounds in this study focused on several factors such as age, gender, education level, income group, financial literacy and, investment experiences.

During these years, several alternative investments were born such as cryptocurrency, equity crowdfunding, and initial coin offerings which were more volatile and riskier rather than more conventional investments. Thus, this study will try to explore the effect of financial literacy and investment experience on the individual investment type chosen.

Research question: What is the common investment strategy preferred by the individual with different financial literacy and investment experience backgrounds?

Hypothesis 1: Individuals with higher financial literacy are more likely to prefer traditional investment assets
Hypothesis 2: Individuals with greater investment experience are more likely to prefer traditional investment assets.

1. LITERATURE REVIEW

1.1. Financial Behavior

Behavioral finance is a study of how the influence of psychology affects the behavior in financial-related activities. Psychologist Lola Lopes in 1987 discovered facts about market psychology and found out that primary emotions that determine the behavior of risk-taking are hope and fear. Other psychologists Daniel Kahneman, Paul Slovic, and Amos Tversky documented the errors where financial practitioners repeatedly make the same mistakes behavior (Shefrin, 2002).

According to Illiashenko (2017), in his writing of the behavioral finance literature review mentioned the study of behavioral finance has grown time by time. It is becoming more complex and creates a different sub-fields studies and those will help researchers in different specialization. While finance itself is a sector that giving a big impact and having big role in the life stage of each individual, organization, government, and country. Thus, the policy decisions should also consider the aspect of behavioral finance.

The premise in behavioral finance is to assume that investors decide under the limited rationality and the principles of behavioral decision theory. For example, during the risk assessment and evaluation of certain investment products, an investor will show cognitive and affective (feeling) issues (Ricciardi, 2008).

Besides the individual level, another important sector is household finance, one of the sub-fields of behavioral finance focused on the investment and borrowing decisions at the household level. In this subfield, we can see how households' behavior in allocating budget, which financial instruments and strategy they choose, what kind of mistakes in choosing the debts, and how these decisions affect the household welfare.

1.1.1. Risk Perception

The subjective decision-making method that individuals use to determine risk and the level of uncertainty is known as risk perception or perceived risk. The concept of perceived risk has a solid foundation in consumer behavior, which has similarities in the decision-making processes of investors in the discipline of behavioral finance (Ricciardi, 2008).

According to Ricciardi (2008), heuristics, overconfidence, prospect theory, loss aversion, representativeness, framing, anchoring, familiarity bias, perceived control, expert knowledge, affect (emotional), and worry is some of the behavioral finance theories and concepts that influence an individual's risk perception for various types of financial services and investment products.

The study of the map of bounded rationality (Kahneman, 2003) defines heuristics as cognitive processes that simplify decisions, particularly in uncertain events. It also can lead to cognitive biases. While Goldstein and Gigerenzer (2002) in the models of ecological reality, stated that recognition heuristics are adaptive strategies that evolved alongside fundamental psychological mechanisms.

Risk perception is also influenced by overconfidence and under the heuristic's rules, individuals generally are very confident and inattentive to form the exact manner in decision making (Ricciardi, 2008).

The prospect theory formulated by Kahneman and Tversky (1979, 1992) explained how the decisions are made by individuals in the probabilistic alternatives involving risk and unknown outcomes. Individuals will choose the asset that offers perceived gains rather than perceived losses. It means when individuals are offered two choice products, one presenting the potential gains and the other presented potential losses even if those are equal, they tend to choose the one with potential gains.

1.2. Financial Literacy

Financial literacy measurement has been widely used as an instrument to predict an individual's financial behavior. It is essential to define and measure financial literacy precisely, to essentially understand the impact of education and its barriers towards an effective financial decision (Houston, 2010). However, according to Houston (2010), there are not any standardized instruments for financial literacy measurement currently. The precise instruments including which components need to be considered will help researchers to better identify the impact of lacking financial knowledge on financial decisions. The studies proposed to differentiate financial literacy into two dimensions; the understanding (knowledge) and the use (application). Those dimensions apply to measure the individual ability to understand and use the information related to finance.

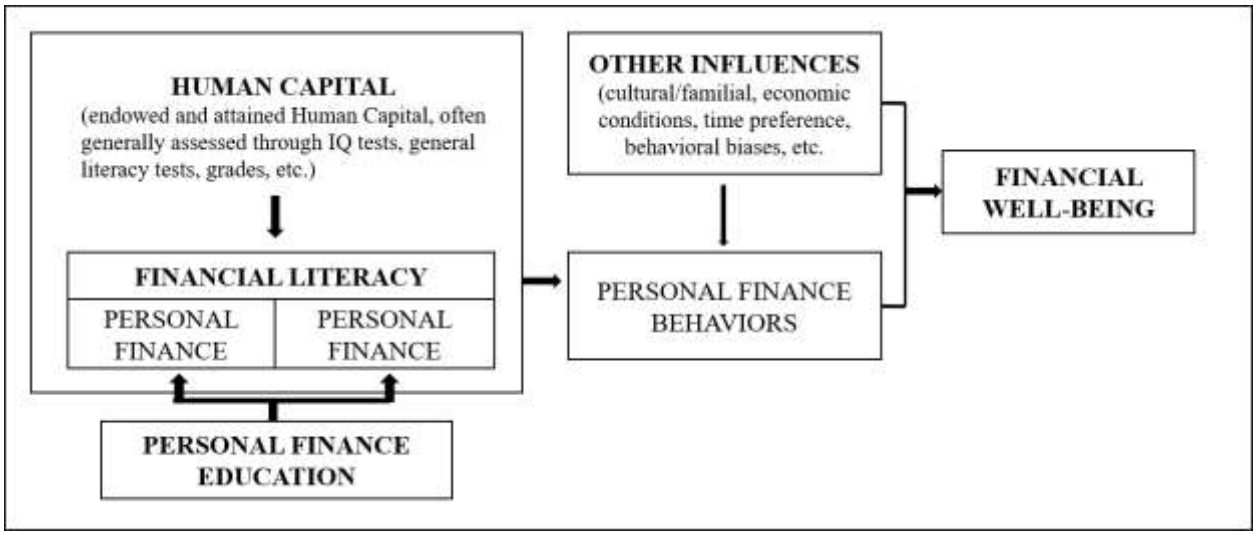
Research conducted by Hung, Parker and, Yoong (2009), in defining and measuring financial literacy presented that financial literacy increasing is in line with education and income. It is predicted by the demographic factors as well as predicts self-saving behavior and planning of retirement. The study shows that the less level of financial literacy of an individual the less willingness of an individual to be involved in a financial activity such as retirement planning.

The Organisation for Economic Cooperation and Development and its International Network on Financial Education (OECD INFE, 2011) defines financial literacy as the combination of the individual's awareness, skill, knowledge, behavior, and attitude to make decisions toward their financial well-being.

According to Hung, Parker and, Yoong (2009), the President's Advisory Council on Financial Literacy (PACFL, 2008) defines financial literacy as the ability of individuals to use knowledge as well skills to effectively manage financial resources following financial well-being for a lifetime.

According to Houston (2010), the relationship between human capital, financial literacy, education, behavior, and financial well-being is shown in Figure 1. As one of the components of human capital, financial literacy is beneficial to be used in activities related to finance to enhance financial welfare. We can see various aspects that affect personal financial behavior such as cultural, family, economic conditions, behavioral biases, and time preferences. Because of these influences, an individual does not always show predicted behaviors' even if the person has financial knowledge and can apply it in financial activities. It is applied the same with the individual's financial welfare. A standardized financial literacy measurement tool will help to capture how financial education increased the human capital to be able to apply the financial knowledge in their financial activities to increase financial welfare.

Figure 1:



Source: Sandra J. Houston, Measuring Financial Literacy, The Journal of Consumer Affairs, Vol. 44, No. 2, 2010 ISSN 0022-0078 Copyright 2010 by The American Council on Consumer Interests.

1.2.1. How literate the world?

Higher education level is positively correlated with financial literacy, even though it is not enough. The study shows that people with higher education is not necessarily understanding money management (Lusardi and Mitchell, 2014). While the financial literacy level decreased and correlated with the pattern of vulnerability among the specific population in the sub-groups.

As reported by Lusardi and Mitchell (2014), overall women having less financial knowledge – and they are aware they know less than men. This gender gap is present across countries with different income levels and different ages. The research also summarizes that the financial literacy level is low globally and the population in the higher income level countries do not equalize with higher financial literacy.

A study conducted by Lusardi (2015) found that financial illiteracy particularly low in specific demographic group such as age. It shows that financial literacy is low among more advance age, which is make this age group become vulnerable and there is a concern about the prevalence of scams related to financial activities among advanced age group individuals.

Besides an advance age group, young adults also reported having low financial literacy (Lusardi, Mitchell and Curto, 2010), fewer than one-third of young adults knowing basic knowledge about

interest rates, inflation, and risk diversification. It is also strongly associated with socio-demographics characteristic and family financial situation. The study found that a male with college degree whose parents had stocks more likely knowing about risk diversification than female with less than a high school education from unwealthy family.

In the developed countries, the relationship between financial literacy, economic development, and GDP per capita is stronger compared to developing countries (Batsaikhan and Demertzis, 2018). The study also shows that certain sub-groups such as the low-income population, young people, women, and people with lower education tend to have less financial literacy.

Based on the insight from the Standard and Poor's Rating Services Global Financial Literacy Survey conducted in 2014 among 150,000 adult respondents over 140 countries shows that only 1 among 3 adults are financially literate. The survey highlighted the low levels of financial literacy globally, numeracy and inflation are the most understandable concepts, and risk diversification is the least understandable concept. The survey also supports other research that women are less literate than men as well young people are an important group for financial education and that they are vulnerable. The survey used questions to measure financial decision makings (numeracy, interest compounding, understanding of inflation, and risk diversification).

Research conducted by Fonseca, et.al (2012) also supports the examination of the gender gap in financial literacy. The research found that the education level of spouses impacts the financial decision-making in the household. An equal level of education in women and men on average have a balance taking the financial responsibilities and activities. Although the role of spouses in the household also impacts on the level of financial literacy.

1.2.2. Why does financial literacy matter?

In the emerging economy, both developed and developing countries face the challenges of financial literacy. Various financial instruments including investment insurance, payday loans, and credit cards might charge high interest rates whereas each individual is responsible to plan their financial decisions about investing and spending for a lifetime.

The importance of financial literacy in the European Union is summarized in the research conducted by Batsaikhan and Demertzis (2018). In the European Union where the population is aging rapidly, and lower public pensions make financial literacy matters so the people can take

bigger responsibilities in the financial decision making and retirement planning. In the eurozone households, a big part of the total debt is the mortgage debts. The financial literacy and understanding of the indebtedness implications will help young households, low-level income groups as well first-time homeowners. Financial literacy also supports the economic and inclusive growth in the European Union.

Financial literacy involves the short- and long-term financial decision of an individual and having a bigger impact on society. Ineffective spending, debt management, bad financial planning, and ineffective borrowing correlated to the lower level of financial literacy (Lusardi, 2019).

The financial planning changes happened both in the asset and liability sides of a household's balance sheets. Many people that are close to retirement age in the US for example, carry higher debts than previous generations (Lusardi, Mitchell, and Oggero, 2018). An individual making more financial decisions and lives longer as well as access various new types of financial products overall. However these facts are combined with a low level of financial literacy globally, and the lower level in the sub-groups that are more vulnerable such as women and young people indicate that the policymakers have to prioritize the improvement of financial literacy.

1.3. Previous Studies

The rapid changes in the financial marketplace and the shift of socio-demographics situation where an aging population have to plan their retirement security and younger generations have to learn on planning their financial activities to shape their financial independence but having limited role models and experiences are the issues that need to be solved through financial literacy improvement (Hilgert and Hogarth, 2002).

A comparative analysis by Janor *et al*. (2016) compares the level of financial literacy and investment decisions of Malaysia and the United Kingdom, the study examines the factor of demographic and socio-economic and their influence on financial literacy. The study shows that in both countries, the level of financial literacy is low. The literature review in this study finds that the main determinants that influence an individual investment choice are socio-demographics, economic and psychological factors. The measurement of this study was conducted using the questionnaire developed by OECD.

The influence of financial literacy on the individual investment choice is significant in the study by Aren and Zengin (2016) as well the risk perception. The investment types in this study are deposits, foreign exchange, equities, and portfolio. The study shows that individuals with higher financial literacy tend to choose a portfolio or purchase equity and individuals with less financial literacy tend to choose the deposit and foreign exchange. In terms of risk perception, individuals with risk-averse tend to choose the deposit, and individuals with higher risk tolerance tend to choose foreign exchange, equity, and create a portfolio. Related to gender, this study found that women are more risk-averse than men, while the marital status does not affect the risk preference. Interestingly the study concluded that single women tend to have higher risk tolerance than married women.

Besides the level of financial literacy, investment experience, and gender also influence the investor bias. The presence of bias and overconfidence among the investors confirmed by Mishra and Metilda (2015). The study confirmed that the more experienced an investor and the higher education level tend to increase the level of overconfidence. While the self-attribution increases among the investors with higher education, the self-attribution has no significant relation with investment experience. The study also shows that men having higher levels of overconfidence compare to women.

A laboratory experiment that tested the exogenous financial literacy conducted by Nieddu and Pandolfi (2021), the result of the study supports the previous studies that financial literacy impacts the individual's investment decision. The research shows that for individuals who have lower financial literacy when a risky lottery is presented as a choice of a financial asset, the value and the calculation of the assets' return tend to be discounted. This research shows when an individual decides to invest, the role of financial literacy is very important. In addition, related to the policy implications, the study suggests that the level of financial literacy can impact the less efficient investment in risky assets such as stock. This is not because of the risk preferences of an individual but the ones that lack financial knowledge unable to calculate the risk and returns of assets. Financial literacy training is one of the powerful tools for households to improve their investment decisions.

The prior negative experience in investing and its relationship with an expected return is not significant according to Starostin (2020). The study supports the influence of the level of education

towards expected returns. The expected return tends to be higher among individuals with higher education level, income, and confidence levels.

According to Wilcox and Fabozzi (2013), common stocks, bonds, real estate, and cash equivalents are classified as traditional assets. While alternative assets are usually bought in the private markets and derive their value from the debt or equity markets.

A study conducted by Grable (1997) concluded that educational level and gender have the most significant factors and resulted in people with higher education tend to have higher risk tolerance. In terms of gender, the study found that men tend to have higher risk tolerance rather than women. Specifically, this study found out that several socio-demographic factors such as gender, employment status, income level, educational background, certain racial background (White, Black, and Hispanic racial background), and marriage status (married and previously married) were significant towards risk tolerance. While in this research the demographic factors such as age, married status; never married, and Asian racial background was insignificant towards risk tolerance.

Most of the investors are risk-averse and women are more risk-averse than men (Noussair, *et.al*, 2012), which supports the previous studies related to gender and risk attitude. The finding of this study was that higher-order risk attitudes particularly prudence and temperance have a positive correlation with risk aversion. It means the more risk-averse an individual, the level of prudence and temperate are more.

Among the investments with high risk and volatility, cryptocurrencies are one of high risk and high return. Cryptocurrencies hype has come back after the price rollercoaster in the past three years. When most of the stock market crashed due to the pandemic in 2020, many old investors shifted to cryptocurrencies. This hype also attracts new individual investors to invest in the cryptocurrency sector. However, few studies have been conducted to define who are the investors and what influenced them to choose this type of investment.

The majority of cryptocurrency investors are men, compared to general investors their portfolio wealth tends to be higher. In terms of bank services and products, they also choose innovative ones (Lammer, Hanspal, Hackethal, 2019). Their characteristics and investment behaviors differ from general investors such as their trading activities and log in to their online banking increasing after

purchasing their first cryptocurrencies. This study supported the previous research that concluded that men tend to have higher risk tolerance.

1.4. Hypothesis Development

As mentioned in the previous studies and literature reviews, several variables affect the individual's investment decision. The hypotheses of this thesis developed based on the behavioral finance theories and the findings of previous studies related to socio-demographics factors that affect investment decision making. The results of the previous studies were conducted in different countries and have various results.

This study aims to explore the relationship between socio-demographics factors towards investment preferences. Previous studies show that several variables such as gender and education have significant relation towards risk tolerance (Grable 1997) and men tend to have higher risk tolerance than women (Lammer, Hanspal, Hackethal, 2019).

Hypothesis 1: Individuals with higher financial literacy are more likely to prefer traditional investment assets.

Financial literacy involves the short-term and long-term financial decision of an individual and having a bigger impact on society. Ineffective spending, debt management, bad financial planning, and ineffective borrowing correlated to the lower level of financial literacy (Lusardi, 2019).

Hypothesis 2: Individuals with greater investment experience are more likely to prefer traditional investment assets.

Korniotis and Kumar (2011), found that older investors and the greater their experience, they tend to hold portfolios with less risk, trade less frequently, show bigger propensity on the year-end tax-loss selling, and lower behavioral biases particularly in disposition effect and familiarity bias.

2. DATA AND METHODOLOGY

2.1. Data and Variables

The data was collected from a non-representative survey via an online survey in Google form format among individuals with various experiences in investment. The survey consists of 26 questions that are divided into three sections. The data set contains twenty-five variables. Eight variables in the first section were developed to determine the individual socio-economic characteristic. These eight variables were: age, gender, country, partner in household, education, work situation, gross income group, and household size. Ten variables in the second section to measure financial literacy including their behavior towards money spending and saving. Seven variables in the third section to define the investment type and strategy chosen.

The questionnaire was distributed online through Facebook groups:

- Expat in Tallinn/Estonia among 14899 members
- Personal social media channel among 1028 friends
- Finantsvabadus among 37675 members

For 11 days, the questionnaire was distributed online through Facebook; a total of 215 responses were collected. There are not many errors in the data found, a total of 1 response was eliminated due to answer in the gender filled as “what is the meaning of other”.

2.2. Structure of the Survey

Lusardi and Mitchell (2008, 2001b, 2011c) developed a standard set of questions as a tool to measure financial literacy based on the Big Three concepts that are universal and can be applied to many contexts and economic situations. Those Three concepts are (1) Numeracy that relates to an individual ability to calculate interest rate and compounding; (2) understanding of inflation; (3) understanding of risk diversification.

OECD International Network on Financial Education (INFE) developed a questionnaire and guidance as a tool to collect data and measure the financial literacy levels and able to help the policymakers to define the needs of improvement, which groups need more attention as well identify the gaps in the provision (OECD INFE, 2011).

The questionnaire for this thesis was designed to be simple and the respondents are expected to spend 5 to 10 minutes to complete the questionnaire. As mentioned in the previous part, the survey consists of 26 questions and is divided into three sections. The questions were taken from several previous papers, combined with the questionnaire developed by OECD INFE (2011) and Lusardi & Mitchell (2008, 2001b, 2011c) to measure financial literacy in the second section. Additionally, self-designed questions were added to the survey to measure the asset preference and investment strategy.

The first section of the survey consists of eight questions and focuses on determining the socio-economic characteristics of the individuals. This section includes age, gender, a partner in the household, education level, income group, and household size. The income group is divided into ten groups, where the lowest income group is between 0 to 500 EUR and the highest group the ones who earn more than 5000 EUR gross income per month.

The second section focuses on determining financial literacy, overconfidence, attitude and source of information which spread into ten questions. To measure financial literacy, the questions regarding asset returns, inflation, and risk diversification were asked in the form of multiple questions and simple “true” or false answers.

The third section consists of eight questions to determine investment types and strategies chosen by each individual. In the first question in this section, participants were asked which assets have been purchased in the last 24 months. The participants can choose several questions from 12 choices of asset types (saving account, terms deposit, pension funds, mutual funds, bonds, stocks, derivatives, real estate/property, commodities, cryptocurrencies, equity crowdfunding, and initial coin offering. The participants were also able to choose “none of the above” if he or she did not purchase any asset mentioned. In the second question in this section, the participants were asked their preference for 10 types of financial products on the Likert scale between 1-10 where 1 is most preferred and 10 is least preferred. The third question was intended to define the length of experience of individuals in investing. The fourth question is to define the investment budget from

monthly income in the percentage. The fifth question in this section defines the reason why individuals save and invest. The participants chose the importance level in a scale of one (unimportant) to five (very important) for the following reasons: retirement, wealth creation, emergency fund, home purchase, leisure/car/hobbies, and securities. The sixth question is designed to define how often individuals invest and participants can choose from weekly to yearly or choose none if not investing. The seventh question is to define the investment strategy where participants can choose from short term to longer-term strategy. Additionally, the last question is an open question where participants can write for any input regarding the questionnaire.

The details of the survey and variable are described in the Appendix. 1 and Appendix. 3.

2.3. Methodology

The multiple regression analysis is used as a method to analyze the data in this study to test the two hypotheses and determine whether financial literacy and investment experience have an impact on asset preferences. Cross-sectional regression analysis used in this research to find the relationship between a single dependent variable and independent variables that fit with the research question of this study. Multiple regression analysis fits to find the answer from the research questions since it can be used to determine the changes in the two or more independent variables associated with the changes in the dependent variable.

The odds ratio in the regression analysis will measure the association between each independent variable and the dependent variable as well as show these changes. Odds ratios are used in the regression to show the likelihood of the independent variables towards the dependent variable. While the p-values will show if the variables are statistically significant or not, it also helps to determine if the relationship in this study also exists in the larger population.

The surveys were distributed in 2021 where the cryptocurrencies become hype and provide an author with important data where new investors shifted or added their financial products to this type of asset.

The main dependent variable in this research is asset preference and independent variables are age, gender, education level, income, financial literacy, investment experience, and strategy. The regression analysis was conducted with Gretl application using the logit model. The dependent variable use weight on the asset preference between traditional and alternative assets and is coded as binary.

2.4. Descriptive Statistics

The details of descriptive statistics presented in Appendix.2.

2.4.1. Socio-Economics Characteristics

The age group of the participants were between 19 to 72 years old with a median of 30 years old and an average 31 years old. From a total of 215 participants, 51.2% (110 people) respondents were male and 48.6% (104 people) respondents were female. One participant chose gender as "other" and treated it as a missing value. Female coded as "1" and male coded as "0" in the regression analysis.

Most of the participants currently living in Estonia (56.7%) or precisely 122 people while other countries outside Estonia marked as other (Indonesia, Finland, Sweden, Germany, Romania, Czech Republic, Portugal, Australia, Switzerland, Italy, Turkey, Croatia, USA, Latvia, United Kingdom, Mexico, India, Qatar, China, Taiwan, Japan, Brazil, Lichtenstein, Netherlands, and France).

In terms of partners in the household, 52.1% or 112 people have a partner in their household and 47.9% or 103 people are single. The education level of participants 84.2% (181 people) attended one or more university-level degree, 8.4% (18 people) completed secondary school, 5.6% (12 people) attended technical or vocational education, 1.4% (3 people) complete primary school and 0.5% (1 people) has no formal education. In the regression analysis, the education was divided into three groups to simplify the variables. Variable education_1 is one or more university degrees, education_2 is technical/vocational education and education_3 is the rest of it.

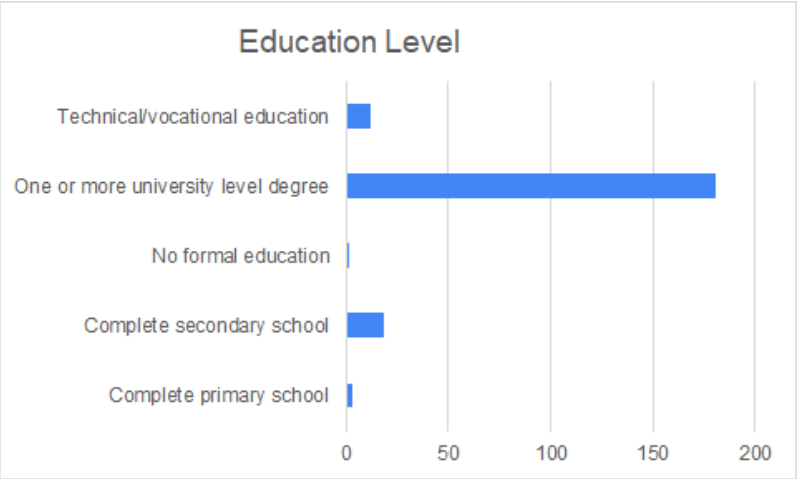


Figure 1. Education level
Source: Wimasagung (2021), author's survey

The majority work situation of participants are employed and work for someone else for 68.4% or 147 people, students 15.8% or 34 people, self-employed 10.7% or 23 people, looking for work 1.9% or 4 people, retired 1.4% or 3 people and other 1.9% or 4 people. In the regression, the variables are classified into three categories, *employment_work* is for participants who work for someone else and self-employed. Variable *employment_retired* is for retired and *employment_3* is for people who are not working (students, looking for work, other).

The income of the participants was measured by the gross income of the household before any expenses and divided into ten income groups. In the regression analysis, the income group is simplified into three groups, low (0-1500 EUR), medium (1501 - 3500 EUR), and high (3501 - < 5000 EUR). In this section, the participant's income is distributed almost evenly in some income groups.

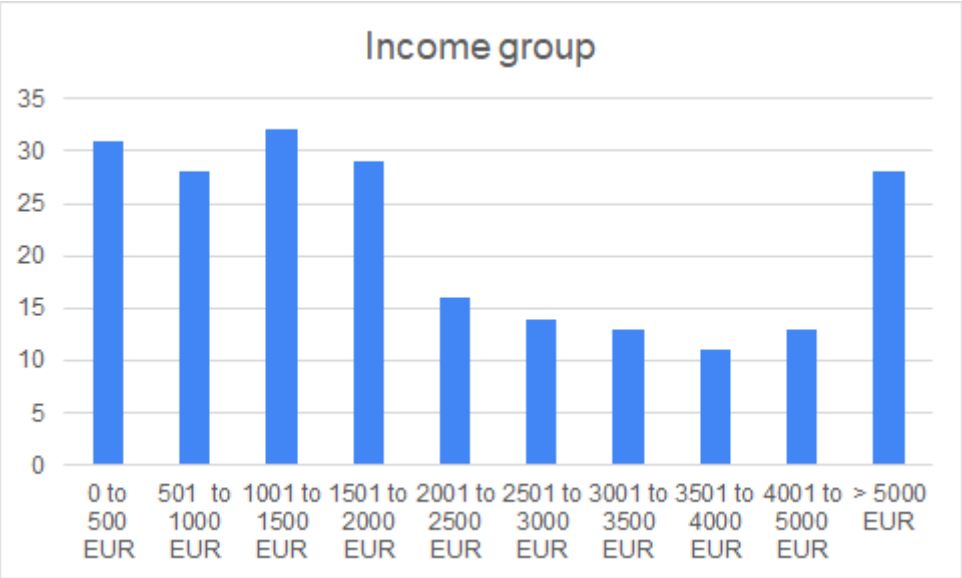


Figure 2. Income group
Source: Wimasagung (2021), author's survey

The household size of participants has a median of 2 and an average of 2.206, one response that answered the household size is 40 and considered as too high was dropped and treated as a missing value.

2.4.2. Financial Literacy Variables

The main interest variable in this study is financial literacy, which is measured by ten questions. In the overconfidence, participants were doing a self-assessment on their financial knowledge on the Likert scale between 1 to 5. The median of the overconfidence was 3.0 and the mean was 3. This shows that the participants have average overconfidence towards their investment skills.

A similar method has been used to measure the attitude (attitude_1 to attitude_3) of participants towards risk and money that spread into three questions. The mean of risk attitude (attitude_1) was 3.14 and the mean was 3. The mean of attitude_2 was 2.95 and the median was 3. The third attitude (variable attitude_3) measures the participants' perspective towards money spending and investing. The mean of variable attitude_3 was 2.29 and the median was 2. It shows that most participants prefer to invest the money rather than spending it. In the regression, the variable is simplified into one by adding all the continuous numbers from each attitude variable.

The financial knowledge was measured by five questions related to knowledge in asset returns, inflation, and risk diversification. The questions method varies from the multiple-choice questions and true or false statements. In the regression analysis, the five questions were kept as the original variable (financial literacy 1-5).

The last question in this section defined the source of information that influences the decision-making of participants. The participants answered were financial advisors or brokers (23.7%), social media (22.3%), organization or company reports (20.9%), relatives or friends (17.2%), magazine or newspaper (6%), TV or radio (0.9%) and other (0.5%).

2.4.3. Investment Experience and Strategy

In terms of the asset type, the respondents were asked about the type of financial products they invested in during the last 24 months. The financial product type is a saving account, term deposits, pension funds, mutual funds, bonds, stocks, derivatives, real estate or properties, commodities, cryptocurrencies, equity crowdfunding, and ICO (initial coin offerings).

In this question, the respondents can choose multiple answers. Thus, this variable is not included in the regression analysis. Stocks are the most popular financial product purchased by the participants (52.1%), followed by a saving account, pension funds, real estate, cryptocurrencies, commodities, bonds, terms deposit, mutual funds, equity crowdfunding, derivatives, and ICO. 15.3% of participants did not purchase any financial products listed in the question.

The variable asset preference is measured by the preference of participants on the ten types of financial products. The preference is expressed in the Likert scale where "1" represents most preferred and "10" is the least preferred. The asset is divided into two classifications: traditional and alternative assets. The traditional assets are savings accounts, term deposits, bonds, stocks, and derivatives. The alternative assets are real estate, commodities, cryptocurrencies, equity crowdfunding, and initial coin offerings. In the regression, the preference of participants was taken from the average preference between two asset classifications.

The experience in investment was measured by the length of time in investing experience. The response varied from 0 months to 240 months. The mean of experience was 33.1224 and the median was 13. The average investment budget of participants was 28.967 and the median was 25 which shows the percentage of investment budget from monthly income.

The reason why people invest is measured by five reasons: retirement, wealth creation, emergency fund, home purchase, leisure/car/hobbies, and security. The participants were asked on a Likert scale between 1 (unimportant) to 5 (very important). Retirement was the most important reason for the participants, the mean of retirement was 3.944 and the median was 5 followed by wealth creation with the mean of 3.94 and the median was 4. It is followed by security, emergency funds, home purchase and leisure/car/hobbies.

51.2% of participants have a monthly investing habit, 13% weekly, 12.6% every half of the year, 6.5% yearly, and the rest 16.7% responded not having a regular investing habit.

34% of participants were investing for long term or more than 10 years, 28.4% invest in the medium terms or 5 to 10 years, 21.4% invest in short terms or 1 to 5 years, 5.1% invest less than one year, 3.3% having an intraday investing and 7.9% not having an investment strategy.

3. EMPIRICAL RESULT

3.1. Regression Model

The dependent variable in this study is asset preference. To test the hypothesis, several models of regression have been prepared with various variables mentioned in the previous chapter. Totally eight models were run using the logistic regression. The dependent variable is asset preference, where it is coded into binary from the comparison of the sum Likert preference between traditional and alternative asset preference.

To develop better models of regression, several independent variables were dropped from the analysis. There are 10 independent variables tested in the regression analysis. Those variables are age, gender, education, employment, income, household size, financial literacy, length of experience (months of investing experience), habit, and strategy.

To uniform the comparison, the lowest value was dropped from each variable; this lowest value became a reference category for comparison. In the education variable, the respondents who achieved lower education (education_3 variable) than vocational or technical education were dropped. In the employment variable, respondents who are not employed were not included in the regression. However, participants who are retired (employment retired) are still included in the regression analysis. In the income section, income groups (income low variable) 0 - 1500 EUR were excluded from the regression. In the habit variable, participants who had a habit to invest weekly and not investing were excluded and in the strategy variable, participants who had a daily and not investing were excluded as well.

After testing several models, variable financial literacy is better to be separated rather than simplified into one variable. Thus, totally there are five financial literacy variables in the regression model (fin.lit_1_asset_return, fin.lit_2_inflation_numerical, fin.lit_3_asset_risk, fin.lit_4_inflation and fin.lit_5_diversification). Through this variable, it is expected to get an overview more detailed in which part of financial literacy has a bigger impact on asset preference.

The total sample on the regression analysis was 214 in the first model and reduced to 213 in the fourth, seventh, and eighth models.

The first model of regression was conducted with basic socio-economic variable age and gender and the next models conducted by adding one independent variable until a total of eight models. In the sixth model, variable household size was excluded to reach better analysis results.

3.2. Regression Result

The first column of the regression analysis shows the odds ratio and the second column represents the standard error. The significance level is represented in the third column, where the *, **, and *** symbol shows a significance level of 10%, 5%, and 1%. The odds ratio is used to show the likelihood of independent variables towards one dependent variable. The value of the odds ratio is between zero to positive infinity, where the odds ratio value is between 0 to 1, it shows the negative association, odds ratios equal to 1 means there is no association, and if more than 1 it means positive association. The odds ratios were calculated by taking the exponent from the coefficient in the regression analysis. The dependent variable asset preference; traditional assets equivalent as 1 and alternative assets equivalent as 0.

The first model runs with basic socio-economic variables, *age,* and *gender* as independent variables. After testing all the socio-economic variables *age, gender, education, income,* and *household size,* in models, one to five, the independent variables of *financial literacy* were added to see the relationship with the dependent variable asset preference. The independent variables in *investment strategy* were added gradually and tested in the next models. In the final models, the independent variables that are included are *age, gender, education, employment, income, household size, financial literacy, experience, habit,* and *strategy*. This analysis compared the result to the reference category which was dropped from the analysis.

The first socio-economic variable *age* is not significant in models one to seven but becomes statistically significant at 10% when all variables were included. The odds ratio for age is 1.042 and means having an increase one year of age or the older individual is associated with 1.042 times or 0.042% greater likelihood of having a preference of traditional assets.

From the table, we can see that variable *gender* has constant significant levels at 5% in the model one to five and increased into the 1% level in the model six, seven and eight. The significance of

the gender variable was increased to a 1% level when variables *financial literacy, experience, habit*, and *strategy* were added. The odds ratio of *gender* is 2.821 means being female is associated with a 2.821 times greater likelihood of having traditional assets. It also means being female is associated with a 182% greater likelihood of having a preference for traditional assets.

The regression analysis shows that gender has positive association and is statistically significant towards traditional asset preference in all models. This result supports the previous studies that found that women are more risk-averse than men.

Education university variable in the regression analysis shows the significant level at 1% in almost all models. The significant level of education decreased to 5% when the employment variables were added in the third model. The odds ratio of education-university is 6.352 means having one or more university degrees is associated with 6.352 times or 535.2% greater likelihood of having traditional assets preference. While the second education group, *education vocational* shows constant significance at 5% in model two to eight. The odds ratio of education vocational is 5.88 means having technical or vocational education is associated with 5.88 times or 488% greater likelihood of having traditional asset preference. The study shows that education has a positive association and is statistically significant towards traditional asset preference.

The *income medium* is for the participants who have a gross monthly income of 1501-3500 EUR per month. In this study, this income group is statistically significant at a 10% level in model four and became not statistically significant when variable household size was added in model five. However, the level of significance increased to 5% in models six and eight when variables financial literacy, experience, habit, and strategy were added. The odds ratio of income medium is 0.428 means having gross monthly income between 1501 - 3500 EUR is associated with a 0.428 greater likelihood of having traditional asset preference. It shows that *income medium* has a negative association towards traditional asset preference.

In the financial literacy section, variable *fin.lit1_assets_return* shows significance at 10% in model 6 and the significant level increased to 5% when variable *habit* and *strategy* were gradually added in model seven and eight. The odds ratio for *fin.lit_1_assets_return* is 2.66 which means knowing in assets return is associated with 2.66 times or 166% greater likelihood of having traditional asset preference. It is also showing a positive association towards asset preference and statistical significance at 5%.

The variable *fin.lit_2_inflation_numerical* shows a significance level at 10% only in the final model and shows a negative association towards traditional asset preference.

The variable *fin.lit_3_asset_risk* has a constant significant level at 5% in models six, seven, and eight and shows the positive association towards traditional asset preference. The odds ratio is 6.188 means knowing in asset risk is associated with 6.188 times or 518.8% greater likelihood of having traditional asset preference.

In models six and eight, variable *experience* shows a significance level at 10% and the odds ratio is 0.992 means increasing the experience by one is associated with a 0.992 times greater likelihood of having traditional asset preference. It also means that *experience* has a negative association with *asset preference*. However, the *experience* became statistically not significant when the variable habit and was added to model 7 but when variable *strategy* was added in the last model experience become statistically significant at 10%.

In the habit section, variable *habit half year* has constant significance at 5% in the last two models in the regression. The odds ratio of *habit half year* is 0.27 means it has a negative association and having a habit to invest every half-year is associated with a 0.27 greater likelihood of having traditional *asset preference*.

In the strategy section, *strategy 5-10y* shows the significance level at 10% in model eight, and the odds ratio is 0.344. It means that having an investment strategy in terms 5 to 10 years have a negative association towards traditional asset preference. Investing in terms 5 to 10 years is associated with a 0.344 greater likelihood of having traditional *asset preference*.

The regression analysis in this study shows that *employment, high income, household size, financial literacy* in *inflation* and *diversification, yearly habit, monthly habit*, and *strategy* variables were not statistically significant towards *asset preference* in any models and any level in this study.

Table 3.2.1. Regression Result

Variable	M 1		M 2		M 3		M 4		M 5		M 6		M 7		M 8	
	Odds	Std error	Odds	Std err	Odds	Std err	Odds	Std err	Odds	Std err	Odds	Std err	Odds	Std err	Odds	Std err
age	1.023	0.017	1.014	0.017	1.015	0.020	1.018	0.021	1.020	0.021	1.027	0.022	1.031	0.023	1.042	0.025 *
gender	1.993	0.280 **	1.963	0.286 **	2.009	0.291 **	2.064	0.294 **	2.130	0.297 **	2.275	0.314 ***	2.592	0.330 ***	2.821	0.345 ***
education_university			4.085	0.540 ***	4.016	0.541 **	4.241	0.546 ***	4.164	0.546 ***	5.253	0.575 ***	5.576	0.592 ***	6.352	0.613 ***
education_vocational			5.966	0.816 **	5.922	0.820 **	6.061	0.830 **	5.923	0.831 **	6.804	0.856 **	6.959	0.885 **	5.880	0.892 **
employment_working					1.157	0.382	1.392	0.399	1.348	0.400	1.527	0.417	1.464	0.428	1.859	0.456
employment_retired					0.796	1.514	1.002	1.525	0.870	1.539	2.844	1.673	3.414	1.786	4.063	1.943
income_high							0.611	0.390	0.644	0.394	0.574	0.424	0.529	0.445	0.530	0.462
income_med							0.558	0.348 *	0.568	0.349	0.462	0.383 **	0.427	0.399 **	0.428	0.409 **
Household size									0.942	0.112			0.966	0.125	0.963	0.125
fin.lit_1_assets_return											1.963	0.369 *	2.147	0.384 **	2.660	0.406 **
fin.lit_2_inflation_num											0.672	0.363	0.561	0.382	0.453	0.407 *
fin.lit_3_asset_risk											4.415	0.710 **	5.013	0.745 **	6.188	0.785 **
fin.lit_4_inflation											0.900	0.511	1.004	0.528	0.838	0.549
fin.lit_5_diversification											1.104	0.377	1.120	0.395	1.152	0.408
experience											0.993	0.004 *	0.994	0.004	0.992	0.004 *
habit_yearly													0.409	0.670	0.496	0.721
habit_half_year													0.252	0.542 **	0.270	0.577 **
habit_monthly													0.928	0.362	1.030	0.421
strategy > 10 years															0.565	0.661
strategy 5-10y															0.344	0.639 *
strategy 1-5 y															1.372	0.665
strategy < 1year															0.448	0.895
N	214		214		214		214		213		214		213		213	
Mc Fadden R2	0.027		0.056		0.057		0.068		0.069		0.107		0.139		0.170	
Dependent Variable: Asset preference																
Note: * p > 0.1; ** p < 0.05; *** p < 0.01																

3.3. Robustness Test

In this section, robustness tests were run with different perspectives of dependent variable asset preference for additional checks. While in the logit regression, asset preference is coded as binary by taking the comparison between traditional and alternative assets, in the robustness test the dependent variable is coded as a continuous value. The value is taken from the total Likert difference between traditional and alternative asset preference.

This section has a slightly different logic than in the regression analysis, due to the construct of the survey question. In the dependent variable, the lowest value indicates a stronger preference of traditional assets and higher value indicate the stronger preference of alternative assets. Thus, the negative coefficient indicates a stronger preference towards the traditional asset.

Five models with total samples 213, were run as robustness tests, the first model in the robustness test is the same as in the final model in the logit regression. Three additional variables; *overconfidence, attitude,* and *investor* included gradually into four models in the robustness test. In the second model, variable *employment, experience, and overconfidence* were excluded to see if there is any change in the R2. The purpose of adding the additional variables is to see if those variables have explanatory power towards the model and give better results on the analysis. The last model includes all variables.

Table 3.3.1. Robustness test results

Variable	M1		M2		M3		M4		M5	
	Coeff	Std err	Coeff	Std err	Coeff	Std err	Coeff	Std err	Coeff	Std err
age	-0.05	0.08	-0.04	0.06	-0.05	0.08	-0.05	0.08	-0.05	0.08
gender	-1.53	1.08	-1.43	1.09	-1.34	1.13	-1.44	1.10	-1.37	1.13
education_university	-5.00	1.71 ***	-4.73	1.67 ***	-4.87	1.71 ***	-4.84	1.69 ***	-4.85	1.68 ***
education_vocational	-4.64	2.45 *	-4.70	2.40 *	-4.63	2.43 *	-4.75	2.42 *	-4.79	2.43 *
employment_work	-0.28	1.38			-0.19	1.42	-0.07	1.42	-0.09	1.43
employment_retired	0.25	3.92			-0.01	3.88	0.52	3.84	0.36	3.90
income_high	1.70	1.43	1.96	1.45	1.79	1.45	1.88	1.47	1.87	1.48
income_med	2.09	1.24 *	2.06	1.21 *	2.21	1.24 *	2.13	1.22 *	2.15	1.23 *
Household size	0.42	0.42	0.42	0.41	0.37	0.42	0.43	0.42	0.42	0.42
overconfidence					0.23	0.63			0.18	0.64
attitude_all			0.24	0.24			0.26	0.24	0.25	0.25
Investor			-2.19	1.88	-2.50	1.97	-2.34	1.95	-2.32	1.95
fin.lit_1_assets_return	-1.30	1.28	-0.73	1.29	-0.91	1.31	-0.84	1.31	-0.89	1.30
fin.lit_2_inflation_num	2.19	1.26 *	2.45	1.24 **	2.30	1.30 *	2.46	1.27 *	2.40	1.30 *
fin.lit_3_asset_risk	-2.69	2.40	-2.81	2.21	-2.75	2.30	-2.73	2.31	-2.76	2.31
fin.lit_4_inflation	-0.02	1.88	0.12	1.84	-0.21	1.84	0.12	1.85	0.06	1.84
fin.lit_5_diversification	0.31	1.22	0.31	1.22	0.23	1.24	0.34	1.23	0.31	1.24
experience	0.00	0.01			0.00	0.01	0.01	0.01	0.01	0.01
habit_yearly	1.60	2.44	1.87	2.35	1.96	2.43	1.82	2.39	1.83	2.40
habit_hyear	1.86	1.78	2.08	1.73	2.31	1.79	1.93	1.76	1.92	1.76
habit_monthly	-0.77	1.52	-0.54	1.46	-0.37	1.47	-0.57	1.48	-0.62	1.47
strategy_long	1.39	2.64	2.23	2.71	1.93	2.82	2.23	2.74	2.10	2.77
strategy_medium	1.70	2.45	2.65	2.55	2.44	2.63	2.77	2.58	2.66	2.58
strategy_short	0.12	2.58	0.95	2.65	0.75	2.77	0.94	2.69	0.84	2.73
strategy_vshort	-2.27	3.87	-1.79	3.98	-1.72	4.15	-1.72	4.05	-1.87	4.12
N	213		213		213		213		213	
R2	12.9%		14.2%		13.9%		14.3%		14.4%	
Dependent Variable: Asset Preference										
Note: * p > 0.1; ** p < 0.05; *** p < 0.01										

In the robustness test table, we can see that there are different results from the logit regression. *Gender* was significant in all the models in the logit regression, however, in the robustness test the variable is not statistically significant in any of the models.

Variable *education university* shows the constant significance in both robustness tests as well logit regression and its negatively correlated towards having preference alternative asset. *Education university* has a constant significant level at 1% in all models and means having one or more university degree the greater likelihood to have a preference towards traditional assets. The second variable *education vocational* shows a slightly different result in the significance level but shows the constant significance at 10% in all models and have a negative correlation towards having alternative asset preference. It means that having vocational or technical education the greater likelihood to have a preference towards traditional assets.

In the income group, *income medium* (1501-3500 EUR) also showed constant significance at 10% in all models in the robustness test. The significance level on income medium is the same as in the logit regression shows the consistency in both analyses. The coefficient for *income medium* is positive towards alternative asset preference which means having income between 1501 to 3500 EUR the lower likelihood to have a preference towards traditional assets.

In the financial literacy section, we can see that *fin.lit_2 inflation_numerical* variable has constant significance at 10% almost in all models. The second model has the highest significant level at 5% when the variable employment, overconfidence, and experience are excluded from the model. The variable has a positive correlation towards *alternative asset preference*, which also consistent with previous analysis.

Variable investing habits every half year and experience become statistically insignificant in the robustness test. Other variables, age, employment, high income, household size, financial literacy (asset return, asset risk, inflation, and diversification), habit yearly, habit monthly, and strategy are not statistically significant towards *asset preference*.

Additional variables *overconfidence, attitude*, and *investor* are statistically insignificant towards *asset preference*, however, adding those variables make the R2 greater which means the model becomes better as shown in the model 2,3,4 and 5.

We can conclude that we can trust the models and the result are consistent in both logit regression and robustness tests.

3.4. Result of Hypotheses

The first hypothesis stated that individuals with higher financial literacy are more likely to prefer traditional investment assets. Financial literacy variables were used to test the hypothesis and to accept that, a positive association must be shown towards traditional asset preference. This study shows that certain financial literacy variables have a positive association with traditional asset preference. Particularly, financial literacy in *asset return* and *asset risk* that statistically significant in the logit regression. As well, in robustness tests, a positive association was found between financial literacy with traditional asset preference, but it is not statistically significant. The

negative association found both in the logit regression and robustness test for the variable *fin.lit_2_inflation_num.*

The second hypothesis stated that individuals with greater investment experience are more likely to prefer traditional investment assets. The length of experience time was used to test the hypothesis. The regression analysis in this study, particularly model six shows that experience is statistically significant towards asset preference. The negative association was found in the regression analysis. In the robustness test, *experience* is not statistically significant in any of the models.

CONCLUSION

This study aims to explore the effect of financial literacy and investment experience on asset preference (traditional versus alternative assets). The more effective an individual invest in the right asset, the greater chance of an individual to achieve financial well-being and avoid high-interest debt, unnecessary spending and borrowing. This study tries to answer the research question: What is the common investment strategy preferred by the individual with different financial literacy and investment experience backgrounds?

To collect the data, a quantitative survey was held through an online platform and a total of 215 individuals participated in the survey.

This study only has a small number of observations, 215 participants and it is not a representative sample of the population. Within this size of the sample, we can conclude that financial literacy in asset return and asset risk have a positive association with traditional asset preference. While financial literacy in calculated inflation has a negative association towards traditional asset preference. There is also a suggestive or weak evidence of a negative association between investor's experience and the preference for traditional assets.

In addition, the study found that education especially having one or more university degrees having a strong positive association towards traditional asset preference, which means the having one or more university degrees the greater preference for traditional assets. The finding supports the previous study where education level has a positive correlation with financial literacy, even the studies found that having higher education is not necessarily understanding money management (Lusardi and Mitchell, 2014).

There is also weak evidence found in this study based on the main analysis that gender have a positive association towards traditional asset preference, which means being female the greater preference for traditional assets. Other weak evidence also found, based on the main analysis that

having investment habit every half-year and having strategy 5 to 10 years have a negative association towards traditional asset preference.

While having medium-income 1501 to 3500 EUR in contrast to low-income, has a negative association towards traditional asset preference, which means the individuals in this income group have a lower preference towards traditional assets.

The study has important limitations, foremost the models have low explanatory power. This suggests that asset preference is a complex phenomenon that is not easily explained by standard characteristics. Therefore, increasing the sample size and considering a wider list of explanatory factors are the two main suggestions for the future studies.

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APPENDICES

Appendix 1. Survey Questionnaire

I. Individual Characteristics

1. Age
2. What is your gender?
    - Male
    - Female
    - Other:
3. Which country are you living in right now?
    - Estonia
    - Finland
    - Sweden
    - Other:
4. Do you have a partner in your household?
    - Yes
    - No
5. Please select the highest level of education you have attended:
    - One or more university level degree
    - Technical/vocational education
    - Complete secondary school
    - Complete primary school
    - Some primary school
    - No formal education
6. Please select which the best describes your work situation:
    - Self-employed (work for yourself)
    - Employed (work for someone else)
    - Looking for work

- Unable to work due to health condition
- Student
- Retired
- Other

7. What is your gross monthly income of your household (before tax and before any regular expenses):
    - 0 to 500 EUR
    - 501 to 1000 EUR
    - 1001 to 1500 EUR
    - 1501 to 2000 EUR
    - 2001 to 2500 EUR
    - 2501 to 3000 EUR
    - 3001 to 3500 EUR
    - 3501 to 4000 EUR
    - 4001 to 5000 EUR
    - more than 5000 EUR
8. How many people are in your household?

II. Financial Literacy

9. I have a lot of financial knowledge and I believe that I am a skilful investor.
   1 - Strongly disagree, 5- Strongly agree

10. I am prepared to risk some of my own money when investing (Likert 1 = Strongly agree; 5 = Strongly disagree)
11. Considering a long-time range (10 to 20 years) which assets normally give the highest return?
    - Savings account
    - Bonds
    - Stocks
    - Don't know
    - Refuse
12. Money is there to be spent (True/False)
13. I find it more satisfying to spend money rather than invest it long time (True/False)
14. Assume that you have to wait for one year to get the gift of the 1000 EUR and inflation stays at 1.7%. In one year's, time, will you be able to buy:
    - More than you could buy today
    - The same amount
    - Less than you could buy today
    - Don't know
15. An investment with a higher return is likely to be higher risk
    - True
    - False
16. The higher inflation means that cost of living tend to be higher
    - True
    - False
17. Buying a wide range of stocks and shares, usually also reduce the risk of investing in the stock market
    - True
    - False
18. Which source of information about investment do you feel most influenced your decision about taking an investment?
    - TV or radio
    - Magazine or newspaper
    - Organization / company reports
    - Social media (Facebook, Instagram, YouTube, etc.)
    - Relatives or friends

- Financial advisors or brokers
- Employer's advice
- Other:

III. Investment Type and experience

19. In the last 24 months have you invested into any financial products below? Please select all the financial products you have invested in:
    - A savings accounts
    - Terms deposits
    - Pension funds
    - Mutual funds
    - Bonds
    - Stocks
    - Derivatives
    - Real estate /property
    - Commodities (i.e. metals: gold, silver; agricultural goods; energy resources: oil, gas)
    - Cryptocurrencies
    - Equity crowdfunding
    - ICO (Initial Coin Offering)
    - None of the above
20. Please rate your preference for investment assets on a scale from 1 to 10, where 1 - is the MOST preferred and 10 - is LEAST preferred.
    - A regular saving accounts
    - Terms deposit
    - Mutual Funds
    - Stocks
    - Bonds
    - Derivatives
    - Real estate / property
    - Commodities (i.e. gold, silver, agriculture goods, etc)
    - Equity crowdfunding

- Cryptocurrencies

21. How many months of actual experience in investment do you have?
22. On average, what percentage of your monthly income goes to savings?
23. Please indicate the level of importance and reason you save and invest. (Likert 1 = Unimportant; 5 = Very important)
    - Retirement
    - Wealth Creation
    - Emergency fund
    - Home purchase
    - Leisure, car, hobbies
    - Security
24. How often do you invest?
    - Weekly
    - Monthly
    - Every half a year
    - Yearly
    - None of the above
25. What is the time range of your investment generally? Please select one that most applicable to you:
    - Long term (more than 10 years)
    - Medium (5 to 10 years)
    - Short term (1 to 5 years)
    - Very short term (less than one year)
    - Intraday (for example daily stock trader)
    - None of the above
26. Any other thing you want to add?

Appendix 2. Descriptive Statistics

Variable	Mean	Median	Std Dev	Min	Max
Socioeconomic					
Age	31.023	30	8.63077	19	72
Gender	0.486	0	0.50098	0	1
Country	0.567	1	0.49659	0	1
Partner in household	0.479	0	0.50073	0	1
Education					
One or more university level degree	0.842	1	0.36572	0	1
Technical/vocational education	0.056	0	0.2301	0	1
Complete secondary school	0.084	0	0.27762	0	1
Complete primary school	0.014	0	0.11757	0	1
Some primary school	0.000	0	0	0	0
No formal education	0.005	0	0.0682	0	1
Work situation					
Self-employed (work for yourself)	0.107	0	0.3098	0	1
Employed (work for someone else)	0.684	1	0.46611	0	1
Looking for work	0.019	0	0.13544	0	1
Unable to work due to health condition	0.000	0	0	0	0
Student	0.158	0	0.36572	0	1
Retired	0.014	0	0.11757	0	1
Other	0.019	0	0.13544	0	1
Income group					
0 to 500 EUR	0.144	0	0.3521	0	1
501 to 1000 EUR	0.130	0	0.33734	0	1
1001 to 1500 EUR	0.149	0	0.35676	0	1
1501 to 2000 EUR	0.135	0	0.3424	0	1
2001 to 2500 EUR	0.074	0	0.26306	0	1
2501 to 3000 EUR	0.065	0	0.24731	0	1
3001 to 3500 EUR	0.060	0	0.2389	0	1
3501 to 4000 EUR	0.051	0	0.22084	0	1
4001 to 5000 EUR	0.060	0	0.2389	0	1
more than 5000 EUR	0.130	0	0.33734	0	1
Household size	2.206	2	1.32678	1	10
Financial Literacy					
Overconfidence	3.000	3	1.08084	1	5
Risk Attitude	3.140	3	1.30387	1	5
Knowledge asset returns	0.684	1	0.46611	0	1
Attitude: money	2.949	3	1.04219	1	5
Attitude: money_2	2.298	2	1.03885	1	5
Knowledge value of money	0.651	1	0.47771	0	1

Knowledge asset return_2	0.935	1	0.24731	0	1
Knowledge inflation	0.893	1	0.3098	0	1
Risk diversification	0.763	1	0.42636	0	1
Source					
TV or radio	0.009	0	0.09622	0	1
Magazine or newspaper	0.060	0	0.2389	0	1
Organization / company reports	0.209	0	0.40776	0	1
Social media (Facebook, Instagram, YouTube, etc.)	0.223	0	0.4174	0	1
Relatives or friends	0.172	0	0.37834	0	1
Financial advisors or brokers	0.237	0	0.42636	0	1
Employer's advice	0.019	0	0.13544	0	1
Other	0.005	0	0.0682	0	1
Investment type and Strategy					
Asset purchase					
A savings account	0.470	0	0.50025	0	1
Terms deposits	0.126	0	0.33282	0	1
Pension funds	0.349	0	0.47771	0	1
Mutual funds	0.117	0	0.32196	0	1
Bonds	0.149	0	0.35676	0	1
Stocks	0.521	1	0.50073	0	1
Derivatives	0.037	0	0.19014	0	1
Real estate /property	0.228	0	0.42046	0	1
Commodities (i.e. metals: gold, silver; agricultural goods; energy resources: oil, gas)	0.205	0	0.40439	0	1
Crypto currencies	0.260	0	0.43991	0	1
Equity crowdfunding	0.117	0	0.32196	0	1
ICO (Initial Coin Offering)	0.019	0	0.13544	0	1
None of the above	0.153	0	0.3613	0	1
Asset preference					
A regular saving account	4.395	4	3.08856	1	10
Terms deposit	5.670	6	3.02911	1	10
Mutual Funds	5.428	5	2.98331	1	10
Stocks	3.549	3	2.70965	1	10
Bonds	5.019	4	2.83002	1	10
Derivatives	6.028	6	2.83654	1	10
Real estate / property	3.600	3	2.83305	1	10
Commodities (i.e. gold, silver, agriculture goods, etc.)	4.795	4	2.97104	1	10
Equity crowdfunding	5.535	5	2.95566	1	10
Crypto currencies	5.237	5	3.24174	1	10
Experience	33.124	13	47.1471	0	240
Budget	28.967	25	21.8612	0	100
Reason					

Retirement	3.944	5	1.31371	1	5
Wealth creation	3.940	4	1.22706	1	5
Emergency fund	3.856	4	1.1811	1	5
Home purchase	3.344	4	1.29797	1	5
Leisure, car, hobbies	2.967	3	1.18553	1	5
Security	3.837	5	1.1747	1	5
Habit					
Weekly	0.130	0	0.33734	0	1
Monthly	0.512	1	0.50103	0	1
Every half a year	0.126	0	0.33215	0	1
Yearly	0.065	0	0.24731	0	1
None of the above	0.167	0	0.37424	0	1
Strategy					
Long term (more than 10 years)	0.340	0	0.47466	0	1
Medium (5 to 10 years)	0.284	0	0.45186	0	1
Short term (1 to 5 years)	0.214	0	0.41105	0	1
Very short term (less than one year)	0.051	0	0.22084	0	1
Intraday (for example daily stock trader)	0.033	0	0.17789	0	1
None of the above	0.079	0	0.27048	0	1

Appendix 3. Variables used in the analysis

Variable	Description
Dependent variable	
Asset preference	Comparison of the Likert scale from 1-10 of 10 different assets that classified as 5 traditional assets and 5 alternative assets, where 1 is most preferred and 10 is least preferred.
	Binary coding in the logit regression, where 0 - alternative, 1 - traditional Calculated the difference value by subtracted the preference is traditional and alternative asset in robustness test
Independent variables	
age	The participant's age
gender	Binary coding, where: 0 - male, 1 - female
education_university	Binary coding, where 0 - non degree, 1 - one or more university degree
education_vocational	Binary coding, where 0 - non degree, 1 - vocational/technical degree
employment_working	Binary coding, where 0 - non employment, 1 - employed/self-employed
employment_retired	Binary coding, where 0 - other/non employment, 1 - retired
income_high	Binary coding, where 0 - other income, 1 - income bigger than 3501 EUR
income_med	Binary coding, where 0 - other income, 1 - income from 1501 to 3500 EUR
Household size	The participant's household number in person
fin_lit_all	Binary coding, where 0 – wrong answer, 1 – correct answer
experience	Months of investing experience
habit_yearly	Binary coding, where 0 - other investment habit, 1 - invest every year
habit_half_year	Binary coding, where 0 - other investment habit, 1 - invest every half of year
habit_monthly	Binary coding, where 0 - other investment habit, 1 - invest every month
strategy > 10 years	Binary coding, where 0 - other strategy, 1 - more than 10 years
strategy 5-10y	Binary coding, where 0 - other strategy, 1 - five to ten years
strategy 1-5 y	Binary coding, where 0 - other strategy, 1 - one to five years
strategy < 1year	Binary coding, where 0 - other strategy, 1 - less than 1 year
overconfidence	Likert scale from 1 to 5, 1 - strongly disagree, 5 - strongly agree
attitude	Calculated from the correct answer of three questions about attitude value from 1 to 15
investor	Binary coding, 0 - not purchase any asset during last 24 months, 1 - purchase asset

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