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**DIFFERENCES IN PREFERENCES BETWEEN REAL ESTATE  
AND EQUITY INVESTORS; EMPIRICAL EVIDENCE FROM  
FINLAND**

Bachelor's thesis

International Business Administration, Finance and Accounting

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## **ABSTRACT**

The main objective of this paper is to evaluate if people can be divided into real estate and equity investors on the grounds of their preferences. The aim is to seek answer to question does two different investment identities exist and how does the preferences differ between the two groups of people. To this end the present analyses the data collected using structured online questionnaire with responses from 84 individual investors from Finland. Using ordinary least squares regression analysis, the author finds that it is indeed possible to identify two different investment identities, real estate investors, and equity investors. There is a strong evidence that real estate and equity investors are difference in terms of their risk and time preferences. Specifically, people who have lower risk and longer time preferences tend to invest in real estate, while, people who want to be perceived as having high status prefer stocks. There is a weak evidence that younger and more educated investors have a preference for real estate. However, probably due to a small number of observations, this effect is dominated by the effect of risk and time preferences.

Keywords: Real estate investor, stock investor, risk preferences, time preferences, investors' preferences

## INTRODUCTION

Investors' behavior is an interest not only for investors themselves but also for financial researchers. In addition to following the market situation, investors also follow the mindset of other investors. Following individual's preferences may not always be the motivator for investment but following others' may be. As Warren Buffett has said, "be fearful when others are greedy" (Buffett 2008). It is said that the preferences protect the investor and work as a so called tool that reduces the risks involved in the investment. The preferences are usually in relation to time and risk preferences. Only creativity and imagination are limiting investors' preferences.

Investors can be divided into many different types, for example investors can be divided into banks, peer-to-peer lenders, angel investors, venture capitalists, and private (or individual) investors. The author of this research keeps the focus on individual investors, specifically real estate and equity investors. Over the years, there has been many discussions regarding real estate and stock investing, and which is a better option. Both options have their highlights and challenges, which leads us to think why people end up investing in one asset type or another.

Surprisingly, existing literature in finance (both traditional and behavioral finance) is largely silent about the difference in preferences between real estate and stock market investors. Considering the above, this Bachelor thesis is about the difference in preferences between equity and real estate investors in Finnish markets because relatively few studies have been conducted on such a topic due to lack of data. Furthermore, it is important to know if people can be divided into real estate and equity investors on the grounds of their preferences. If they can be, it means that there are two separate investors' identities. The main objective of this research is to seek answer to question does two different investment identities exist and how does the preferences differ between the two groups of people. Basically, the aim is to compare the preferences of the two groups of people and find the determinants of such preferences or, in other words, factors that separate these identities.

Often the preferences and views of future play a key role in investors' decision making regarding the investment. The importance and relevance behind of this research is that people know how to

make the right investment decision matching their own objectives in such an era of economic uncertainty. Understanding how individuals handle choice under uncertainty when they invest money is of great interest for economic policy makers as well as for academic research. This research will benefit individual investors as well as companies to choose funders in the future. However, the clearest motivation for this research is adding knowledge and understanding regarding the preferences of specific investment. Equity, real estate and voluntary pension saving affect more and more individuals and households nowadays.

*For the purpose of testing, the hypotheses are formulated as follows:*

- 1. People with higher education have higher income and therefore invest in real estate.*
- 2. People with higher risk preferences are more likely to invest in stocks*
- 3. People who seek higher status when investing prefer to invest in stocks.*

To seek answer to the research question, other scientific papers will be analyzed, and other sources related to the topic from media and Internet publications. It will rely in multiple sources of evidence in order to get some depth to the empirical framework. This study will be conducted as a quantitative research since it uses structured online questionnaire and measures the incidence of various views and opinions in a chosen sample. It is the most suitable data collection tool for this research because the survey allows to get personal facts and opinions from a large sample.

This study is organized as follows. The first section reviews the relevant literature. Second section describes methodology and the data used in the analysis. Third section presents the empirical results and provide some discussion. The final section provides conclusions.

# 1. LITERATURE REVIEW

Financial markets provide many choices for investors to invest their money. An individual investor is responsible for knowing all the various alternatives and how these options can be chosen to achieve the overall objectives (Geetha, Ramesh 2011). An investor's decision making process is driven by the views of future and personal preferences (Heino 2010). Other factors affecting the decision making are viewed in the form of external and internal as well as from the long term and short term point of view. External factors include both the macro (economics and politics) and micro factors which are related to the company itself. Internal factors include then, for example knowledge, degree of education, willingness and the psychological part (Yuniningsih 2017).

Personal investors change their preferences between extreme style portfolios, between small and large and growth versus value. Past style returns and discrepancies in income, as well as investment newsletter's advices have an impact on these changes in preferences (Kumar 2009). Falk *et al.* (2018) provided the Global Preference Survey (GPS), and it was planned to determine the preferences that plays a key role in financial theory. According to this GPS, preferences, such as time, risk and trust, change notably across countries.

The connection between direct real estate investment index and stock returns has been identified to be small but negative. Therefore, this means that the diversification is possible in theory due to different factors driving the two asset classes (Szumilo *et al.* 2018). It is a concern for many people how to gain wealth and how to become financially independent. Investing in real estate is considered to be one method to do so, but it is not the most realistic method for the average investor on grounds of the substantial expenses and investor's a lack of resources. Therefore, the stock investing is the most functional way for the population in general to gain wealth (Spaht, Rubin 2016). In addition, due to the fact that real estate is more tangible asset than stocks, it means that it is easier to start buying and selling stocks whereas selling an actual real estate or housing investment.

## 1.1. Real estate investing

Real estate investing has been blooming recently and therefore, it is a very common investment method among investors. Property investment from a private investor's point of view is an investment activity, that is, pursuing a financial benefit with own or borrowed capital or with combination of these. Real estates are also being invested throughout their whole life cycle (Ginevičius, Zubrecovas 2009). As in almost all investment methods, the risk is also involved in housing investment. In principle, the process in this investment activity is as follows: Housing is usually bought with a mortgage. Renovation of the apartment is possible in order to achieve added value and then the apartment is rented out. This, however, is not necessary, so alternatively it can be rented out as it is. This is about the cash flow target, which, in other words, means that it will generate monthly rental income for the owner. On a broader level, it is also possible to buy an empty property and build a building to it and then generate the cash flows or sell it later with higher amount than the investment. Three different sources of return on investment (Seay *et al.* 2013), which are rent payments, property appreciation and tax advantages, makes the real estate as a remarkable investment.

According to Lekander (2017), managing risks, return enhancement, inflation hedging and liability matching as well as the fact that allocation has increased over time are reasons why real estate is being held. Similarly, there are several tax advantages included in owning rental property, which are deductibility of interest, taxes, depreciation, maintenance, utilities, casualty losses and insurance and all of these reduce the holding costs of the real estate (Anderson 2008). The popularity of real estate investment therefore is based on the combination of both monthly cash flow and potential growth in value. With this, it is possible to get steady and secure return. Historically, real estate investment is one of the safest forms of investment for value retention and growth opportunities. Therefore, it goes without saying, that many individuals, foundations and companies have decided to invest in real estate.

The Chinese Urban Household Survey, conducted on 2009, shows that investors who have an ownership of second home, are more affluent, and they have a higher education than the average participant in the survey. Owners of these empty properties have 34 percent higher income than the average and also 0.9 years of more education. It is said that Chinese investors are successful and mature. According to the Chinese Urban Household Survey, the average age of the respondents was 49, and 95% of the participants are married (Glaeser *et al.* 2017).



The complicatedness of projects realization and risk levels are being decided by internal and external factors. The basic idea for the investors is to interpret problems how to use present resources to profit maximum returns from the investment. Therefore, each investor needs to invent approaches to problems of selecting the project, investment resources allocation, enhancement, and maintenance as well as real estate value development (Ginevičius, Zubrecovas 2009).

The future development plans of the location are commonly connected to property investment. Furthermore, the more affluent people are usually attracted for other types of real estate, such as commercial property, rural and semi urban land, and resorts (Geetha, Ramesh 2011).

Previous historical studies show connections between the real estate prices and general economic conditions. These linkages start from the tables, which point at the ways that price development and construction of properties were synchronized with long time horizon in aggregate economic activity (Gottlieb 1976; Quigley 2002).

When it comes to infrastructure, there has been a debate whether or not infrastructure can be described with the term real estate. According to empirical research and Finkenzeller (2010), there is two different asset class, in spite of the fact that infrastructure and real estate have some shared characteristics.

## **1.2. Stock investing**

By investing in stocks, one is gaining a part ownership in a corporation and then entitles one's own self to part of that company's earnings and assets. When investing directly in equities, there is possibility to choose which companies to invest in and influence the company's operations by participating the annual general meetings. It may take more time to collect a highly diversified equity portfolio since it is not worthwhile to make small equity investments because the costs will generate to be higher. According to Spaht and Rubin (2016), investing in common stocks is the most invested asset type since it gives the possibility for capital appreciation and constantly growing earnings.

Stock market is one of the riskiest since the high returns goes hand in hand with higher risks. People often choose to invest their money in stocks because it seems easy and one is not even thinking why the money is being put there (Geetha, Ramesh 2011) but it may also be a very personal for some people. Investors' think that stocks can do better than real estate and the disposal

of stocks is more convenient. Majority of investors understand the basic key financial concepts such as interest compounding, time value of money and inflation according to Rooij's *et al.* (2011) provided study. In spite of this, there are only few investors who understand more than these basic concepts. There are people who cannot even explain the difference between stocks and bonds, the relationship between bond prices and interest rates, and the principles of spread of risk. The study shows that the financial decision making is affected by financial ability to read. People with lower literacy have lower likelihood to invest in stocks (Rooij *et al.* 2011).

It has been studied that participating in stock market activity has been found to have a connection with wealth, income and the degree level of the investor (Christiansen 2008; Mankiw, Zeldes 1991; Haliassos, Bertaut 1995; Bertaut 1998; Guiso *et al.*, 2003; Vissing-Jørgensen 2004). Especially people with higher level of education have a higher tendency to invest in stocks in comparison to people who are less educated (Christiansen 2008, Hong *et al.*, 2004).

There has also been a debate about the age affecting the participation in the stock market. After the postwar era in 1960s, when elderly people still had memories of the Great Depression and younger people had only knowledge of the high returns, it is possible to expect older people to participating in lower levels to stock market than younger people. People who have experienced the macroeconomic shocks, tend to be more pessimistic about the future returns and they are also more likely to invest smaller amount of their financial resources in stocks due to past experiences (Malmendier, Nagel 2011).

### **1.3. Risk preferences**

There are many ways to measure risk preferences from very quantitative point of view to quite simple. Risk preferences can be measured as a qualitative point of view as well. According to Charness *et al.* (2013), if the aim is to catch treatment effects as well as differences in individual risk preferences, simple methods are then the most suitable for this. These methods have the benefit of being more linear and therefore it makes it easier to elicit sensible risk preferences from a wider set of individuals (Charness *et al.* 2013). Risk preferences could be measured via a standard single-item self-reported question about risk preferences for example in a way that the respondent has to give an answer on a scale from one to ten. According to Dohmen, *et al.*, (2011) the self-reported risk preferences provide reliable information about actual risk-taking actions of

individuals. The single-item self-reported question is widely used in the literature and is also used in the Federal Reserve Survey of Consumer Finances (SCF), as well as in ECB's Household Finance and Consumption Survey (HFCS). In addition, Falk *et al.* (2018) report that the single item self-reported question captures a substantial variation in risk preferences.

Numerous experimental methods occur to find out the individual risk behavior and these are developed by economists and psychologists. It is important for economic analysis and policy prescriptions to determine the risk preferences of individuals. Example of the risk measure is an experiment where people have a possibility to buy a lottery ticket with equivalent probabilities of winning either \$10 or \$0 and choose the amount invested. The amount invested then is used to determine the risk preference. Individual who is willing to pay up to \$5, is a risk neutral person and if a person is willing to pay less than \$5, one is considered to be a person who is afraid of taking risks. Risk-seeking person, on the other hand, would choose to pay more than \$5. Normally used method of measuring risk preferences that depend on investor's self-reported tendency for risk is questionnaire. The most commonly known risk question is formulated the following way: "*Rate your willingness to take risks in general*" on a one to ten scale, where one refers to "*completely unwilling*" and 10 refers to "*willing*" (Charness *et al.* 2013).

Risk-averse and risk-seeking are generally known terms, both in everyday life and in academic finance. In theories, these terms refer to whether the expected return on an investment is negative, positive or neutral. In everyday conversations, the risk refers to the value fluctuation of an investment or a maximum loss. When eliciting the investor's risk tolerance, it is important to consider the latter two. What kind of a value fluctuation the investor believes to be able to tolerate and what is the maximum risk the investor wants to take in a certain period of time. It is important for the investor to recognize one's own risk tolerance. With the help of this, it is easier to make investment decisions matching own objectives and maximize the benefit of an investment (Järvinen, Parviainen 2012).

In all crucial economic decision, risk and uncertainty is being part of it. As a result, being able to analyze individual's attitudes towards risk is connected to the aim of understanding and foretelling economic behavior (Dohmen *et al.* 2011). Investors shift their pattern of taking risks in regard to market trends according to both empirical findings and different observations of stock markets. Individual investor's risk preferences were measured in bull and bear markets. Bull markets refer to the upward condition when prices are rising, or they are expected to increase, and bear refers to

the opposite, so the downward market when prices are expected to fall. These results were measured in a way, that the sample of 292 investors were divided into two groups, one group (N=143) made decisions in bear markets and other group (N=149) made decisions in bull markets. Zero to hundred scale was used to measure the risk perception. It appeared that in both market conditions the risk rates were similar but despite of this the decisions that investors made, were different. People who made decisions in bear markets, chose riskier portfolios than in the bull markets (Sokolowska, Makowiec 2017).

Investor's tendency to prefer avoiding losses has been discussed to be one factor affecting the decision making according to Mittal (2010). This is also connected with the fact that when investors fear taking losses, their level of courage is then determining the amount of risk taking, so in other words, the loss aversion has a very notable impact on the risk taking (Yuniningsih 2017).

Wealth levels show correlation with risk preferences as well. Stocks with high liquidity and volatility, greater state-ownership, high expansion potential and stocks that have performed well in the past are preferred among people who are considered to have higher financial stability. Stocks with high beta and liquidity, weak past performance, low price and small capitalization, however, are preferred among investors who are less affluent. (Ng, Wu 2006).

Women are less eager to take risks than men in all fields and willingness to take risks appears to decrease steadily with the age for females based on a Dohmen's *et al.* (2011) provided study investigating individual risk behavior. This research was conducted on a global level, and measured willingness to take risks in general. Results show that age, gender, height and parental background have financially significant influence on individual's willingness to take risks (Dohmen *et al.* 2011). Risk preferences vary across countries as well, and according to GPS, Africa and Middle East show greatest risk tolerance. Elderly population is also more risk averse than the young population on average in global level (Falk *et al.* 2018).

Many personal experiences from the economic fluctuations may have shaped the individual's willingness to take risks. For example, the discussion about the "Depression babies" shows that their experiences of the great macroeconomic shock and Great Depression had a long-term influence on their risk behavior (Malmendier, Nagel 2011). In addition to this, there are other macroeconomic histories that investors have lived through and a great interest to investigate the

effects of these past events' correlation to investor's performance. Malmendier and Nagel (2011) conducted a study about this and wanted to research whether the macroeconomic history people have experienced have had a connection to their willingness to take financial risks. They wanted to test whether people who have suffered low market returns previously, have lower willingness to participate in the stock market nowadays. Results show that people who have experienced risky asset returns in the past performance are more likely to take risks in the future. People who have had positive experiences from the past stock investing and experienced high stock market returns means higher risk tolerance, and therefore those investors have higher probability to participate in the stock market (Malmendier, Nagel 2011).

#### **1.4. Time preferences**

One of the key terms in economics is time preference. For example, asset pricing, project appraisal, and investment and saving decisions indicates time preferences (Wang *et al.* 2016).

Time preferences are usually measured with hypothetical quantitative approach. These are for example formulated as a binary choice questions, as in Frederick's (2005) study: "*Which offer would you prefer?*" and the answer was given in two different options: "a payment of \$3400 this month" or "a payment of \$3800 next month". This indicates the "wait-or-not" option and it is a good way of determining the time preferences of an individual (Wang *et al.* 2016). Another option is the Money Earlier or Later (MEL) Task. In this option, people usually choose the alternative they want from a set of two or more monetary payments in a specific time dated. In most of the cases, each alternative is a pair of choices including a smaller and earlier payment as well as a larger and later one. These decisions are then used to evaluate the time preferences (Cohen *et al.* 2016).

Historically, three different methods, which include matching, dynamic "staircase" choice method and fixed-sequence choice titration have been used to measure time preferences for financial profits and losses. Typically, binary questions occur in the choice method and the comparisons are used to conclude an indifference point, which is then changed into a discount rate. If there would be an investor who had a choice between getting \$10 immediately or \$11 one year from now, and the investor would pick the immediate alternative, and after presented with an option again between \$10 and \$12 one year from now, the investor would pick the future alternative. The investor would then be indifferent between \$10 today and some amount between \$11 and \$12 one

year from now according to this model of options. For the analytic purpose, the indifference point should then be calculated as average from the lower and upper bound, which would then indicate \$11.50 in this case. This amount could then be modified into a discount rate using one of the discount models. The matching method, on the contrary, requests the exact indifference point directly. The example of matching method question would be the following: “What amount X would make her indifferent between \$10 immediately and \$X in one year” according to Hardisty *et al.* (2013). The matching method, additionally, makes no proposals that which amounts would be suitable. The fixed-sequence titration method shows already arranged list for the participants with options between a smaller and sooner amount as well as a larger and later amount (Hardisty *et al.* 2013).

Traditionally, real estate has been considered low risk asset class with good diversification properties. Results show that these characteristics are crucially dependent on the investor’s time horizon (MacKinnon, Al Zaman 2009). Results of MacKinnon’s and Al Zaman’s (2009) study show that for the long term investors the risk of property investment is much less than for those with short term investment horizons.

Many studies show the correlation between personal characteristics such as gender and age when analyzing the difference in time preferences. Also, wealth and education are considered to be factors that affect the time preferences. According to Wang *et al.* (2016) and prior literature (Becker, Mulligan 1997), the more assets people picture to the future, the more patient people tend to be. It then means that both wealth and education have a connection to patience. Finland’s percentage choosing the “wait” option in order to gain more in the future is 86% based on the “wait-or-not” question, adapted from International Test of Risk Attitudes. The percentage is quite high and reason behind is that the participants in the study were all economics students and therefore the likelihood of taking the market interest rate into consideration is higher than among the ones who are not studying business related subjects (Wang *et al.* 2016). Wang *et al.* (2016) also suggests that lifestyle may affect the short term waiting tendency and culture affects more on the long term investing. Although the GDP and growth rate influence the longer time horizon decisions more than just the culture (Wang *et al.* 2016). However, Fudenberg and Levine (2006) acknowledged that each person is attracted by more immediate consumption possibilities even though they have an interest towards long term goals.

Falk's *et al.* (2018) provided GBS reveals that European population behaves more patiently than the rest of the world. Countries that this high level of patience is observed, are located in Western Europe, English-speaking countries, or in neo-European. However, the Scandinavian countries show particularly high levels of patience in addition to above mentioned countries. The study shows that men are also more patient than females, although the difference is not that significant (Falk *et al.* 2018).

### **1.5. Other preferences**

Investors may also have non-financial goals in addition to maximizing returns (Rubaltelli *et al.* 2015). Other preferences, such as psychological factors, like status and overconfidence have been associated with behavioral finance. Under this theory, people are seeking to gain more from their investments rather than just risk and return (Statman 2010). However, the overconfidence, which in other words, means that one thinks to be better-than-average in investing, has been studied to lead in many problems in financial markets. It may result in immoderate risk taking due to unawareness of the risk management models (Kaustia, Perttula 2012).

Based on Bengtsson *et al.* (2005), men are associated with higher probability of overconfidence and more eager to get higher grade than female students. The literature regarding this topic is small but increasing towards the same direction and this is due to lack of desirable data regarding the connection between gender and overconfidence (Bengtsson *et al.* 2005). Overconfidence has been connected to many financial disasters such as start-ups going out of business due to excessive level of confidence among finance professionals (Olsson 2014).

Overconfidence can be measured for example with the help of regression, which is a statistical method since it enables to interpret the observed parameters of obvious overconfidence. Olsson (2014) provides some additional suggestions how to collect the data more accurately. Olsson (2014) recommends choosing the sample of items precisely, most preferably by randomly. If the aim is to analyze the different levels of overconfidence, part of the linear correlation between overconfidence and proportion correct should be removed in order to evaluate the overconfidence and proportion correct on different item sets. In addition, it is recommended to use the given intervals instead of traditional interval estimation format. According to Olsson (2014), an example of this above mentioned given interval is: "The population of Indonesia lies between X and Y

million. Assess the probability that the statement above is correct” (Olsson 2014). According to Grinblatt and Keloharju (2009), without better data, it is challenging to argue that specific traits affect the trading. The data in the past, used to determine a linkage between trading and behavioral attributes, is experimental or aggregated among people. The findings that come from the self-reported surveys are usually studied at the individual level. These researches and trading records are usually based on small groups of people, and sometimes have timing issues where performance and turnover influence on an investor’s desire to reply to the questionnaire. The problem that is also usually related to these surveys, is that the variables that are needed are actually missing (Grinblatt, Keloharju 2009).

Based on the GPS, individual characteristics have a great impact on the trust and social preferences. Negative reciprocity is decreasing with age, positive reciprocity is linked with bell shaped curve to age, and altruism is not considered significant regarding age (Falk *et al.* 2018).

The most influential factors for some people are simply leaving a legacy for the next generation, be the best in the market, boost one’s own status and feel pride when investments are doing great. According to Statman’s (2010) study “What Investors Really Want”, the benefits that investments offer can be divided into three groups which are “utilitarian, expressive and emotional”. Commensurate risk is related to utilitarian benefits, so everything should always be corresponding to the amount (Statman 2010). In this study, the author has studied more expressive and emotional benefits which are more connected to the status part. Emotional, as the name refers, are related to the question: “How does it make me feel”, according to Statman (2010). Statman uses the term expressive benefits, which, according to him, provide an opportunity to express values, status and lifestyle to both the investor and other people. Hence the impact of social factors in an investment decision may be related to symbolic motives, such as demonstrating goodwill and raising self-esteem and social status, that is, expressive motives. People wonder how other people see them, and due to this, people start doing decisions for example regarding investments. For instance, people want status, and think that they are perceived as having higher status if they invest their money (Statman 2010). Status and wealth are connected together, due to the fact that when income increases, so does the importance of status concerns according to subjective well-being surveys (McBride 2001; Dynan, Ravina 2007 referenced in Roussanov 2010).



## **2. DATA AND METHODOLOGY**

### **2.1. Data**

This part explains the methodology used in this study. The quantitative part of this study is based on the questionnaire and the aim is to get detailed and accurate data regarding the preferences the two asset types prefer. The author of this Bachelor thesis carried out the survey answers on April 2019 with Google forms. A total of eighty-four (N=84) people from Finland participated in the survey. The aim was to get responses from different age classes in order to add depth to the data collection, so the author distributed the survey through social media and by email to reach participants all over Finland. The age distribution of the survey was 21-66 with average age of 41,9 years and 52,4% of the participants were males.

Each participant was asked to carry out a questionnaire that included 17 questions. The survey proceeded in five different blocks. First block included personal data regarding gender, age, education, income and financial satisfaction of household. Second block included the question which measured investor's preference of choosing stocks or real estate. Third and fourth blocks included the risk and time preferences and the fifth section included status and overconfidence questions. Many survey items were supported by previous research, for example questions that are used to measure risk preferences were taken from the prior literature (Statman 2008; Falk *et al.* 2018). Full transcript of the survey is found from the appendices.

### **2.3. Variables and regression estimation**

The author of this Bachelor thesis decided to use the ordinary least squares (OLS) regression analysis to analyze the collected data. With the help of ordinary least squares, one is able to determine unknown parameters in a linear regression model. It is one of the simplest statistical methods used. Estimates are used to estimate the regression line, that is, the model to describe the choice of changing variable. After running the model, one is able to check whether it aligns with

the theory or alternatively, it may show contradict theory, when one has to explain the inconsistency.

It is essential to choose the right variables in the data analysis part (Guyon 2003). Selecting an informative sub collection has many benefits in comparison to using all the features. This makes the results easier to interpret and possible lead to higher forecast performance, for example (Gieseke 2017). In this regression, *stocks* is used as the main dependent variable and it measures the investor's preferences of choosing between stocks and real estate. The answer for this above mentioned variable was given in 1–10 scale where 1 refers to no doubt in real estate and 10, which refers to no doubt in stocks in the survey. Only 10 variables out of 17 were used, which means that most of the questions were formulated as an average variable. The aim is to analyze and determine the relationship between dependent variable and a series of other independent variables which are explained the following way:

**Table 1. Variables**

<b>Gender</b>	Gender options were female, male and other. Male = 0, female = 1
<b>Age</b>	Measures investors age distribution (21-66 years)
<b>Education</b>	Measures investor's degree of education (0 – No university degree to 1 – university degree)
<b>Income</b>	Average from two different variables which measure investor's scale of income and financial satisfaction (1 – lower group to 10 – higher group)
<b>Risk</b>	Average from two different variables which measure investor's risk preferences (1 – lower risk to 10 – higher risk)
<b>Time</b>	Average from two different variables which measure investor's time preferences (1 – lower to 10 – higher time horizon)
<b>Status1</b>	Measures investor's perceived status (1 – not seeking status to 10 – seeking status)
<b>Overconfidence</b>	Average from three different variables which measure investor's confidence level (from 1 – not confident to 10 – extremely confident)
<b>Stockrisk</b>	Measures investor's perceived riskiness for stocks (from 1 – not risky at all to 10 – extremely risky)
<b>Realestrisk</b>	Measures investor's perceived riskiness for real estate (from 1 – not risky at all to 10 – extremely risky)

Source: Repo (2019); author's description of variables

To demonstrate the purpose of the OLS regression, the author compares three different models of the same data. Model 1 includes gender, age and education. Model 2 includes the previous variables and added income, risk and time preference variables to the mix. Model 3 then includes all the previous variables and added status, overconfidence and perceived riskiness of stocks and real estate to the mix.

The general form for the equation is as follows:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_t X_t \quad (1)$$

where

Y - the variable that you are trying to predict (dependent variable),

X - the variable that you are using to predict Y (independent variable),

a - the intercept,

$\beta$  - the slope.

### 3. EMPIRICAL RESULTS

In this section the author conducts empirical analysis with the survey data using OLS regression.

**Table 2. Regression results**

Variables	Dependent variable: Stocks					
	Model 1		Model 2		Model 3	
	Coefficient	Std. Errors	Coefficient	Std. Errors	Coefficient	Std. Errors
const	11,505	(1,599) ***	2,578	(2,116)	2,593	(2,329)
Gender	-0,126	(0,825)	0,618	(0,568)	0,675	(0,609)
Age	-0,105	(0,034) ***	-0,021	(0,033)	-0,019	(0,033)
Education	-1,791	(0,964) *	-0,648	(0,694)	-0,010	(0,748)
Income			0,009	(0,223)	0,147	(0,243)
Risk			1,258	(0,152) ***	1,018	(0,194) ***
Time			-0,405	(0,217) *	-0,453	(0,217) **
Status1					0,270	(0,146) *
Overconfidence					-0,043	(0,240)
Stockrisk					-0,027	(0,180)
Realestrisk					-0,240	(0,156)
N	84		84		84	
Adjusted R2	14,58 %		61,29 %		62,10 %	

Note: \* - <0.1, \*\* - <0.05, \*\*\* - < 0.01

As seen in the table above (table 2), model 1 shows that coefficients for variables age and education are statistically significant, age is significant at the level of 1% while education is significant at 10%. Both variables are negatively associated with preference for stocks, meaning that the older

the investor is and the higher the education is, the more likely one is to invest in real estate. If investor's age increases by 30 years, the preference for stocks decreases (preference for real estate increases) by 3,15 units on a scale from 1 to 10 ( $-0,105 \times 30$  years) and if the degree of education increases from high school or college degree to university degree the preference for real estate increases by 1,791 units ( $-1,791 \times 1$ ). The hypothesis: "People with higher education have higher income and therefore invest in real estate" is partly consistent with the empirical evidence from the first model. Since the income did not show any significant results, it cannot be interpreted the way that people with university degree have a better income. It only shows on the previous studies (Wang *et al.* 2016; Becker, Mulligan 1997) that wealth and education have a relation to time preference and therefore the hypothesis was formulated this way.

However, when risk and time preference are added to the model as additional explanatory variables, coefficients for both age and education lose their statistical significance. This means that age and education do not predict preference for stocks (or real estate), the effect of age and education that is observed in the model 1 is dominated by the effect of respondent's risk and time preferences. Risk preferences are positively (negatively) and time preferences are negatively (positively) associated with preference for stocks (real estate). This means, that in the scale of 1-10 the preference for stocks increases by 6,29 units ( $1,258 \times 5$ ) if the person decides to take 7,5 risk (moderate risk seeking) instead of 2,5 (moderate risk aversion) on the scale on 0-10 expecting to earn substantial return. Considering the calculations, the second hypothesis, "people with higher risk preferences are more likely to invest in stocks" is empirically consistent with the evidence. Coefficient for time preference has a higher statistical significance in the model 3 (when additional controls such as overconfidence are added to the model), so it is analyzed in the next paragraph.

Model 3 shows same results as presented in model 2, except the time variable is more significant in this model, being 5% and in addition to the previous results, status1 variable has been added to the mix and it shows statistical significance of 10% level as well. Time preference is the opposite than the risk preference, it is negatively associated with preference for stocks, so the longer the time period people are seeking for their investment, the bigger the likelihood is to choose real estate. Change in time preferences by 5 points on a 1 to 10 scale (from moderately short-term preferences to moderately forward looking time preferences) is associated with 2,27 ( $-0,453 \times 5$ ) decrease in preferences for stocks in favor of real estate. The hypotheses regarding the status variable "people want higher status and think that they are perceived as having higher status if they invest in stocks" can be considered consistent with the empirical evidence. Coefficient for

status1 variable is 0,270 which means that it is positively associated with preference for stocks and means that the more investors are seeking status, the more they invest in stocks. The change in status1 by 5 points on a 1-10 scale is associated with 1,35 units ( $0,270 \times 5$ ) increase in the preference for stocks. The change is slight, but it can be generalized based on these results that people who want to be perceived as investors will choose the option of investing in stocks.

All other coefficients that the author expects to be important are not statistically significant, most likely, due to small sample size ( $n=84$ ). For example, difference in gender did not reach statistical significance nor overconfidence, income, perceived riskiness for stocks and real estate. Based on the previous studies age and education matters on some extent. Education is said to affect the decision making process according to Yuniningsih (2017). However, in this study the difference in preferences were the main priority to investigate and therefore it is considered to be irrelevant that the variables age and education are not statistically significant in the larger model. Preferences include the risk, time, and other preferences such as status-seeking, and therefore age and education do not belong to this preference group. Based on Bengtsson *et al.* (2005), higher overconfidence is discovered to be higher among men, and it could lead to immoderate risk taking and therefore it would have made sense that overconfidence could have shown positive connection with preference for stocks. No results were found, which either means that investors in Finland do not share the same characteristics as people in other countries, or then the sample size was just too small to measure this incident. Further studies, in any case, would be needed to verify more statistically significant results.

## CONCLUSION

The author investigates the difference in preferences of real estate and stock market investors using the data from a survey on investors' preferences in Finland. While the literature about preferences of real estate investors is virtually non-existent, the results regarding preferences of stock market investors are consistent with the prior literature on the topic and the results of the regression analysis largely support all of the author's provided hypothesis. The regression analysis is based on quantifying the relationship between the preference for stocks or real estate and a series of other independent variables, such as risk, time and status preferences. While the analyzed data is limited in scope, it is still possible to interpret the data the way that real estate investors do not share the same characteristics as stock investors since they belong to two different asset classes.

Based on the results of this study, it is possible to identify two different investment identities; real estate investors and equity investors. There is a weak evidence that people with higher education and longer time preferences, invest in real estate and younger people in stocks and people who have higher education could have better financial support and therefore able to invest in properties. Despite the statistical significance of variables age and education disappears with the addition of other important determinants of preferences for stocks (real estate), this effect might be due to a small number of observations. More importantly, however, people who have higher risk preferences and people who want to be perceived as having high status prefer stocks.

All other coefficients that the author expects to be important are not considered statistically significant due to small sample size (N=84). The author of this Bachelor thesis did not find correlation between gender and investment method but according to previous studies on the topic, women's willingness to take risks is lower than men, and willingness to take risks also decreases with the age (Dohmen *et al.* 2011), so it would make sense that women would prefer investing in real estate then. Explanation for this would be the fact that real estate has been investigated to be less risky asset than stocks so therefore women would choose real estate over stocks. On the other hand, it may be the case that there are no gender differences in Finland. However, in this study the difference in preferences were the main priority, which include the risk, time and status preferences, and therefore it is irrelevant to think that gender, education and age did not show

statistically significant results in the larger model (model 3). Further studies, in any event, would be needed to verify more statistically significant results. In addition, it appeared from the previous studies that comparison between real estate and stock investors is not common, or at least it is very insignificant and therefore further studies could invalidate this occurrence as well.



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# APPENDICES

## Appendix 1. Questionnaire

1. *Gender?*

*Female*

*Male*

*Other*

2. *Age?*

3. *Education?*

*High School*

*College*

*Bachelor's Degree*

*Master's Degreee*

*PhD*

4. *How would you describe your level of income?*

*Lowest group 1 2 3 4 5 6 7 8 9 10 Highest group*

5. *How would you describe your financial satisfaction of your household?*

*Very dissatisfied 1 2 3 4 5 6 7 8 9 10 Very satisfied*

6. *Imagine that you are choosing between the two investment opportunities: One is to invest in stocks, another in real estate. Both investment opportunities promise the same return. In which you would invest?*

*No doubt in 1 2 3 4 5 6 7 8 9 10 No doubt in  
real estate stocks*

7. Which of the following statements comes closest to describing the amount of financial risk that you are willing to take when you save or make investments?

Not willing to 1 2 3 4 5 6 7 8 9 10 Take substantial  
take any financial risk risks expecting to earn  
substantial returns

8. How much downside in income are you willing to accept for a 50/50 chance of a 50% upside? Please write your answer in percentages (%).

9. What is the likelihood to you to give up something that is beneficial for you today in order to benefit more from that in the future?

Not at all likely 1 2 3 4 5 6 7 8 9 10 Extremely likely

10. What is the time period you prefer to invest?

Less than a 1 2 3 4 5 6 7 8 9 10 More than 10  
year years

11. It is important for me that people perceive me as an investor.

Does not describe 1 2 3 4 5 6 7 8 9 10 Describes  
me at all me perfectly

12. Investments are a personal statement for me.

Does not describe 1 2 3 4 5 6 7 8 9 10 Describes me  
me at all perfectly

13. My investment skill is much better than the average investor's.

Does not describe 1 2 3 4 5 6 7 8 9 10 Describes me  
me at all perfectly

14. I am better informed about investment than the average investor.

Does not describe 1 2 3 4 5 6 7 8 9 10 Describes me  
me at all perfectly

15. *I am better at school than average.*

*Does not describe me at all* 1 2 3 4 5 6 7 8 9 10 *Describes me perfectly*

16. *On the scale from 1-10 how you perceive riskiness of investments in stocks?*

*Not risky at all* 1 2 3 4 5 6 7 8 9 10 *Extremely risky*

17. *On the scale from 1-10 how you perceive riskiness of real estate?*

*Not risky at all* 1 2 3 4 5 6 7 8 9 10 *Extremely risky*