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**PRIVATE PERSON AS AN INVESTOR IN HOUSING MARKET
OF HELSINKI**

Bachelor's thesis

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I hereby declare that I have compiled the paper independently and all works, important standpoints and data by other authors has been properly referenced and the same paper has not been previously presented for grading.
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ABSTRACT

In this research, the examination deals with housing markets and to be more specific, from the point of view of an investor in housing market of Helsinki. The core idea is to define the reasons behind a profitable investment and to produce information for normal persons who could be possible real estate investors. The aim of this study is to determine the possibilities of property investing in Helsinki – capital of Finland. To be more specific the key aspect in this research is to find relation between price levels of districts of Helsinki and the profitability of an investment with the differently priced districts. Investing with loan and price determinants are the secondary themes in this study. Research questions are: “Which type of real estate property is the most profitable?”, “Are there differences in profitability between districts of a city?” and “Is it profitable to invest in real estates with loan?”. The questions are quantitative and that is why the research is produced mainly with quantitative methods, yet qualitative methods are used for theoretical parts and to offer background information. The results give a bright illustration that districts with higher price level are generally more profitable areas to pursue real estate investing than districts with lower price level. Yet all the areas have their own advantages which are described in this research. Price determinant analysis deals with the features that effect to the price of real estates.

Keywords: real estate investing, housing market of Helsinki, price determinants

INTRODUCTION

When observing the concept of an investment, it can be described, for instance, as an asset, an item or a property with the purpose of generating income or appreciation of value or both. Different investments have their own characteristics, yet the core idea is the same. When investing in to the stocks of a company, it is useful to have knowledge considering the industry of the company or the measures which could affect to the possible changes of the value of the company (and thereby impacts to the value of the investment). In general the same principles are helpful when considering the characteristics of real estate investing. It is useful to have knowledge of the market conditions of the area from where the property will be bought. It is crucial to know, for instance, what are the market price levels in a certain district and if the prices are in appreciating or depreciating trend.

The area of real estates as an asset belongs to the most significant asset classes in the worldwide economy. The size of the worldwide property market is estimated to be worth around 26 trillion US dollars and the share of residential properties was 13% in 2006 (Tiwari, White 2014). After the latest loan crisis the turmoil around the international financial markets have influenced to the real estate investment market to become a part of the financial market, as the real estate investment market has been more predominantly a separate field of market (Lombardi 2009). When classifying the different types of the real estates, there are housing markets and commercial markets. And when entering in to the business more, the commercial markets can be divided in to types, such as: retail properties, hotels, industrial properties and retail properties (Ebisike 2010). Yet the residential properties are the ones under observation in this research.

For a private person, real estate investment (buying a property for rental purposes in order to gain profits) is practically every time a long-term investment which influences to the economic situation of the owner for a long time. It is very typical in Finland that the buyer raises a loan from the bank and then pays it back with the rental income paid by a tenant. If the property bought is chosen correctly, most of the monthly payback amount will be covered with the rental income. Inflation is helping the investor due to the fact that the real value of the loan will decrease when time goes

by. Private person as a real estate investor is a topic which is not widely examined in Finnish housing market, yet there has been at least one (Korkeamäki 2008) research which have act as a source of innovation for this research.

The population of Finland is moving and centralizing to the largest cities and therefore the demand for apartments is increasing in those areas. Massive construction sites are modifying the image of the cities, such as, Helsinki, Tampere and Turku. New grand infrastructure projects are influencing heavily to the housing markets of these cities. The area of housing markets is quite familiar for Finnish people since it is a public topic of discussion in the media every week and thousands of Finns are already gaining extra income by owning and renting out different types of properties. The exploration sifts through the rental housing markets in Helsinki, capital of Finland, district by district. The research aims to solve the following research questions:

- Which type of real estate property is the most profitable?
- Are there differences in profitability between districts of a city?
- Is it profitable to invest in real estates with loan?

The target of this research is to produce information and timely review of the situation in which an individual seeks to buy a real estate in purpose of an investment in Finland. The theme has been limited in to Helsinki area. The capital of Finland forms the most valuable housing market in the country, large trade quantities and diverse housing districts are convincing qualifications to study this sort of topic as well. Various sorts of research methods have been used for this project. Qualitative data has been gathered from topic related books, articles and market reviews. Numerous databases have been used to collect quantitative data for this research and data from databases has been used to prудuce different types of calculations concerning the market conditions and price levels of properties. Combined research methods are used in cases which have demanded that, for instance, when important data has been in qualitative form, the data has been transformed to quantitative form. The author has used his own discernment when modifying the form of data, similar methods have been used in earlier studies with same type of topic.

The first part of this research manages the background considering real estate investing. Housing market overview observing Finland and Helsinki is processed and theoretical area of investing the way it is pursued in real estate investing is evaluated. The areas concerning a private person as an operator in the housing market are dealt with, such as: profitability, formation of profits, investing with loan and factors which have an influence to the prices of properties. The second part presents the formulas and methods which have been used to calculate the empirical results in chapter 3. The third part also includes the analysis of the calculated figures.

1. REAL ESTATE INVESTING

1.1 Market overview

Housing markets are not a growing industry in Finland, at least when observing geographically the whole country and the areas of it – housing markets are basically dying away in most areas. Finland is getting increasingly to the position in which there are only a couple of significant metropolitan areas. The largest cities; Helsinki, Tampere and Turku are expected to construct a growing triangle, while most of the other parts of the country are expected to suffer decreasing prices of housing markets. The areas outside of the provinces of the largest cities are in awful position since they are enduring of migration losses and aging of the population. Many of the Finnish cities, which have earlier been healthy centers of growth in their own provinces, are experiencing more difficult times, on top of the decreased price levels, the apartment trade amounts have decreased significantly and due to that reason, the price levels are not stable and liquidity of the markets is suspicious. Meanwhile the growth feeds itself and price levels of apartments are growing in the largest cities. Small apartments in the hearts of the largest cities are the most desired targets of the housing markets at the moment (HYPO 2019).

When observing the professionally acting investing operators in housing markets of Finland, there are three types of investors which show up: 1) Larger foreign investment companies 2) Professional domestic operators 3) Domestic private persons who seek extra income in the form of rental income. There is only one group that has lately operated more carefully due to the alarming expectations of the future - Professional domestic investors. Others seem to have more optimistic future views (Kaleva *et al.* 2017).

On one hand, financing for the international investment companies has become more strict due to changed banking regulations, on the other hand, Finnish private persons can still get mortgages with very low interest rates due to the economy levels of EU area and interest rate politics driven by European Central Bank. As stated the growth of interest rates are expected to occur not until some time in the next decade (Linnake 2018).

Real estate investing is very similar to stock investments, only all of the medias are usually paying attention the stock market situations. Real estate markets does not receive similar observation although it is not proven that the stock markets would always be a better choice for an investment. One cause to remember in all sorts of investments is that the bigger the possible returns, the bigger the risks are. Although, stock markets have been the most profitable market when the worldwide research was made by Harvard scientists (Jorda *et al.* 2019). The Finnish stock markets had returned 10,03% average annual real return per year during the time of observation, the average rate of return in the whole study was 6,67%. When observing the history of housing market in Finland, that field have been successful as well. Housing markets had returned 9,58% per year whereas the average of all the countries was 7,26%. After the year 1980, Finnish housing markets have returned 16,32% per year, as the average is 10,78%. Although, there was a housing bubble in the late 1990s and the stock market of Helsinki has had a real rate of return of 3% since year 2000 (Raeste 2019).

It is very probable that Helsinki will experience value appreciation of housing market in the future. The population of Helsinki is 21% of the population of Finland. Almost half of the population of Helsinki is living in rental apartments. It is a propitious field to examine the possibilities of housing market of Helsinki as an investment target in Finland. New housing base is widely under construction in Helsinki – the most recent and the oldest properties are the most expensive ones. The unemployment percent is decreasing in Finland especially in the largest cities – people will have more money to spend in the housing market. The Euribor interest rates are at low level – there are plenty of cheap mortgages to use to finance property investments. The peak of the housing construction in Helsinki was 2018 or will be in 2019 – less apartments will be built during the next years – less apartments will eventually be in the market whereas the net migration will be clearly positive – demand for apartments will be high (PTT 2019).

In this research, the districts of Helsinki are divided into 6 different groups according their overall average prices per square meter. When observing the groups by determining what types of districts are included in those, the classification groups start from the southern part of Helsinki. The most expensive districts of Group 1 are of course in the heart of the city. It can be stated that all the districts of Group 1 are on the southern side of the Railway station of Helsinki. The most valued areas are near to the sea in a cape in the south Helsinki as well. Building base of these districts is

generally relatively old in the scale of Finland (about 80 to 100 years old). Most of the buildings in the expensive areas are following the Jugend style architecture. Buildings are densely built and the height of buildings is strictly restricted by regulations – basically there is no chance to build buildings in there any more. Ruoholahti district in the western side of the others is the only one which contains buildings mainly built or renovated in the late decades of 20th century. Group 2 includes areas in the same cape (such as Kruununhaka) but also surrounding areas in the north (Takatöölö). Group 3 includes relatively appreciated areas mainly built after the world wars such as Ruskeasu and Lauttasaari. While Group 4 contains mainly building base constructed in the 90s and most of the districts are located in the east and northeast from the city center. Group 5 is the largest group and most of its areas are classical suburbs originally built in the 60s and 70s. Those areas tend to surround all the other districts and many of them are next to borders of surrounding cities – Espoo and Vantaa. Districts of Group 6 are in the northern or eastern Helsinki and the districts tend to include lots of municipal rental apartments which usually decreases the price level of free housing market in that area as well. Some of the districts might belong to category of cheaper price level but some factors such as having a subway station can raise the price levels. The average apartment sizes of an area is also a factor which tends to lower the price level. The oldest buildings have generally contained only small apartments – since it was a trend in early decades of 20th century. Groups 1, 2 and 3 benefit the existence tram lines which is clearly an advantage. The subway line from west (Lauttasaari) to east (Mellunmäki and Vuosaari) is appreciating the housing prices in the surrounding areas of the stations as well (Ilonen 2009).

1.2 Theoretical background

Firstly, in all types of investing: there is not a perfect investing strategy which is suitable for every investor. All the individuals who are considering investing as a way to gain extra wealth should build an own strategy – suitable for the requirements and target of the investor (Hämäläinen, Oksaharju 2016).

On the other hand, the wealth creation of real estate investing is usually generated by following the investing philosophies that include: cash flow (rental income), property bought under the market price and for that reason: availability of value appreciation, additional value appreciation generated by the acts of the investor, usage of leverage and value appreciation by repayments of loan, tax planning and utilization of inflation (McElroy 2013).

Real estate investing is a form of passive investing. Passive investing relies on maximizing returns yet minimizing buying and selling. There is surely a chance to do it also with faster buying and selling but that makes no sense in general. The core idea is to create wealth by and by. The idea of passive investing is not to necessarily try to beat the market return but to match the market or one sector of the market. Well-diversified portfolios and all types of funds are ways to pursue passive investing in general – the investments are diversified. For instance, S&P 500 and many industry related funds are offering ways to join to this type of area of investing. It is also very easy to justify why there it makes no sense to do continuous trades and exchanges in portfolio of an investor when largest possible return is desired – this matter is even more clear when the duration of an investment will be long term (Hyttinen 2014).

With well chosen investment property there is also a good chance to at least match the housing market appreciation of the same area. As in many funds, the real estate investment lacks flexibility and liquidity compared to many other forms of investing. When observing flexibility, it is easier to sell stocks or to keep the money in a savings account for an investor, both of those ways are very flexible compared to property investment. It is usually a time and money consuming process to sell a real estate and then buy a new one – to switch an investment (Barclays 2019).

Modern Portfolio Theory is usable in real estate investing as soon as there are multiple investment targets in a portfolio of an individual. The theory can also be used when the property investment constructs a part of a portfolio among other asset types. On one hand, Modern Portfolio Theory is a model which illustrates the building of the portfolio by an investor who do not want to risk the money invested. On the other hand, according to Modern Portfolio Theory the expected return is maximized (or optimized in some cases). The basic rule is that the higher the expected return – the higher the risk is within an investment. The riskiness of a portfolio can be determined when the riskiness of all the parts of portfolio are known and it can be calculated, for instance, by using a weighted average (Peterson 2012, 14).

Decision Theory is an area which exists all the time when investment decisions are made. It is a mix of statistics, mathematics, psychology and philosophy. When the time of a investment decision comes, the Decision Theory always has an influence to a mind of an individual. It is very important to know the basics of this theory, for instance, when making a decision whether to buy or not to buy an investment property. Mathematics and statistics might prove that it is not rationally wise to

buy this or that real estate. Philosophical and psychological factors state the opposite option and then the individual needs to make a decision (Myerson 1991).

In theory, it can be sometimes more reasonable to use loan to finance real estate investment even if the investor has the required money for the property. For instance, if an investor has 300,000 euros to use for an investment. It can be more profitable to invest it to 2 apartments cost of 200,000 euros each and take a loan to finance the rest 100,000 euros ($2 \times 200,000\text{€} - 300,000\text{€}$). There are at least 2 good theories which advocates that type of solution: 1) leverage of the money 2) diversification of portfolio. Leverage is tool which sort of makes the money of investor work harder if part of the investment is financed with loan (interest should be low enough or even predetermined). Inflation will reduce the relative share of the loan and with the same time the value of an apartment grows. Eventually it will give a large advantage. On top of that, diversification to 2 different properties will reduce the risks and there is no rule or principle which presents that diversification reduces the profits. With 2 properties and 2 tenants the risk of default is cut to half. All the tools which can be used to manage portfolios in order to utilize diversification can also be used in real estate investing Capital asset pricing model, asset pricing model, multifactor model, proxy models and accounting and debt-based models, to only mention a few examples of the tools which can used to analyse risk and return of an investment: capital asset pricing model, asset pricing model, multifactor model, proxy models and accounting and debt-based models, to only mention a few examples of the tools which can used to analyse risk and return of an investment (Haight, Singer 2005, 6).

Managing risks is an area which is always present when there is an investment. The currency invested is always at risk to be lost, in principle. In general, risk and return are highly correlated in all types of investments. The higher the risks the higher the possible returns are. There are many fields in risks: project-specific risk, industry-specific risk, competitive risk, markets risk and international market risk. All of the mentioned are possible risks in real estate investment as well. As mentioned earlier, diversification is one of the most effective yet easy-to-use tools against risks. It might not be rational for a private investor with small investment portfolio to cultivate wide risk management or to use a lot of time for risk-analysis, yet risk management is something which should be done with all types of investments. Usually there is always a risk of default (when stocks of a company are bought) or housing bubble (when property is bought with lots of money and the prices sink) or other. Risk tolerance is matter which should be evaluated by people who are involved in any sort of investments. Risk tolerance is an amount of risk which the investor can,

both financially and emotionally, tolerate. And when the investment does not include too much risk, then the investment should be done (Hampton 2011, 101).

1.3 Private person as an investor

Savings accounts, stock purchases and others are the usual alternatives for real estate investments. People tend to overlook the possibility of practising commercial real estate operations. For private persons, an own real estate is generally the largest and possibly the only objective of investment – people do not consider property investing as a profitable way to gain wealth. It is stated that most of the people have the potentiality to pursue real estate investing, but for some reason they fail to do it (Kaarto 2015).

It is surely beneficial to have some knowledge concerning real estates and the use of financing methods but it is very possible to do successful real estate investment without professional background of the industry. Lack of knowledge, feeling that it requires too much money and fear that the industry is only suitable for professionals – are the most significant factors which tend to discourage people of investing in the properties (Haight, Singer 2005, 2). Keeping the investing simple is the key factor when pursuing investing, it is not necessary to have wide mathematical knowledge when calculating the returns, risks or yields of investments (Lynch 2000). On the other hand, sometimes individuals desire more control of their own lives. They do not want to be that dependent towards, for instance, their employers. Real estate investment can be a useful method to achieve more independency for a person. It does not mean that after one successful real estate investment an individual would receive a secure way to get rich and quit daytime job, but it is start towards more independent life. It is sort of running an own business and with couple of beneficial real estate investments it is possible to grow this type of business into well-paid full-time job (Haight, Singer 2005).

A mentionable factor in Finnish household markets is that there is a progressive sales profit tax, it is topical at the time when the property is sold and if the selling price is higher than the initial price paid for the real estate. The tax (30% when capital is 0-30,000€ and 34% of the share which exceeds 30,000€) can be avoided if the seller of the property or one family member of the owner have lived there continuously at least two years. That is usually reasonable tax planning to register some family member to the address of the property, for instance, after the mortgage has been paid

back and selling the apartment is necessary. That is a rational way to evade sales profit taxes (Verohallinto 2019).

In turn, real estate investing includes multiple possibly unpleasant characteristics. Firstly, it is usually not a profitable move to hire real estate management company to handle management of a real estate investment unless a person has several different sites. That is why the real estate investment requires continuing work and attention to manage all the matters concerning, for instance, the required repairs and possible issues with tenants. Secondly, when financing the investment with borrowed money, it can turn to be a risky deal since it always includes a risk when taking a loan. If an investor does investments multiple times with loans the risk level might raise. Thirdly, determination of the value of a property can sometimes be troublesome. There are many reasons for that, yet usually people tend to overestimate the value of their own properties when determining the price for sales purposes. The complication is a result of:

- 1) The uniqueness of the properties. No property is similar with each other and it is impossible to classify their prices proportionally correctly with each other.
- 2) There are massive amounts of ways to calculate the value of a property. The correct way to calculate expected returns can be very difficult.

Lastly, the liquidity of a real estate is usually awful when compared to other financial assets. It is hard to sell a real estate quickly and it usually can get highly unfavorable to sell a property quickly. The bigger the real estate the longer selling times usually occur (Haight, Singer 2005, 14).

1.4 Profitability

In real estate investing there are two main sources of income, passive income (rental income) and appreciation of value. Income from appreciation of value is reachable not until the property is sold. Different properties have different characteristics which determine how large are the mentioned income sources. Location, size, original price of the property and many other factors have their influence on the both of the sources of income in real estate investing.

When analysing the possible investment targets, it is important to determine which sort of advantages are present when choosing a correct target. Different additional features bring different improvements to the value of a real estate. On one hand, when buying an apartment in the city center of a large city (let us assume that with price of 400,000 euros), even though the rent would

be high in some measures (1,000 euros per month), the proportional yearly yield of the rental income is probably not going to be very high (3% in this case). Whereas the appreciation of value of the apartment can produce more significant gains. If the value of the same apartment is experiencing a yearly growth of 5%, the value of the apartment in 10 years would be over 650,000 euros. On the other hand, when buying an apartment in the suburban area (let us assume that with price is 100,000 euros and rent 500 euros per month), the same yearly yield would be significantly higher (6%). The appreciation of value of the apartment would probably be lower than in the city center. All in all, the described apartments could have the same proportional yields of income when having totally different price, location and other features (Eldred 2012, 3).

Real estate investing can be seen as very useful source of wealth creation, yet it is still not an easy way to get rich. It can often be a surprise that this industry is widely available especially for middle and upper income people. It usually requires a little harder and more concrete work to make beneficial investments in the area of real estate, than it does with some other fields of investing, such as stock market investments and investment funds. As said (Grabel 2011) when observing the profitability of a group of real estate investments, a statistical fact is that a certain percent of the of the rent payers are going to default their rent paying at some point of a rental agreement and that is something to keep in mind when renting a real estate to a tenant.

1.5 Investing with loan

The basic principle is that real estate investors are debtors. The borrowed money is used to finance a purchase of real estate. The loan will be paid back. The investor can live in the real estate by himself and pay back the loan with whatever income or savings. The investor can also acquire the required repays by renting the real estate for someone else who pays rent for it. When that type of income is used for payback of the loan, the real estate will be owned by the investor sooner or later. Monetary history suggests a pattern in the world of modern finance where debtors have benefited from borrowing more valuable dollars and paying back with less valuable dollars (Haight, Singer 2005). While the nature of the economy tends to be inflationary, the investments made by borrowed money tend to be beneficial (*Ibid.*)

Using the loan to fund a real estate investment can be very reasonable decision. Even, if the investor had the total purchase price of a real estate, there might be a rational move to use also a

loan for the investment. For instance, if an investor has 250,000 euros and it would be possible to buy an apartment for 250,000 euros, why should not the investor buy 2 properties by 200,000 euros each, instead. If the interest rates would be low enough the that type of investment could be much more valuable. There are at least two important factors influencing to that idea: leverage and diversification. With leverage, the paid sum for the 2 apartments is smaller in relation when loan is used. Diversification helps to reduce risks in the first instance.

Usage of loan is a good way to finance real estate investment. Loan gives investor a possibility not to have total sum of money of the real estate at the moment of purchase, on top of that the leverage makes it even more worth it to finance property investments with loan. Even if the leverage itself is a good matter, the loan should be paid back as soon as possible. When it is done, the leverage can be used to finance the next investment and the faster the loan is paid back the lower amount of money is used for interest expenses. In general (if it is possible considering the economic situation of the investor), it would be reasonable that the monthly rental income is totally used to finance repayments. Extra money can be wise to use to repayments if possible. All in all, when real estates are bought by using leverage – it is possible or even probable that the investor prospers financially (Orava, Turunen 2016).

1.6 Price determinants

“The most significant factor in the pricing of an apartment is of course the location. That defines the asking price level.” (Hämäläinen, 2015).

Housing markets are unique when compared to other markets due to its unique assets, no real estate property is similar with each other while, for instance, financial assets can be exactly similar with each other. Physical location is a cause which differentiates all the houses or apartments from each other. Location is never an absolute, when some location is bad for having a house there, it still can be very suitable to have a factory there to produce something and so forth. Purpose of a property is something crucial to keep in mind when comparing real estates with intention to buy one. Laws, local traffic patterns, attributes and uses of neighboring lots of land, availability of parking space, views and many other features can effect to the intended purpose of a real estate and thus the price that is reasonable to pay for such a property (Haight, Singer 2005, 4).

Location plays a crucial role since usually people tend to require good accessibility especially to the train and subway stations. In the suburbs the prices can get mentionable positive effect if there is a train or subway station within a half a kilometer from the real estate. The second most important matter might be the effectively used square meters which means that base solutions of the apartment have to be comfortable and practical. In Finnish housing market, the apartments which go through the building (there are windows to multiple directions) are more valued than those which do not go through the building. The conditions of the condominium (every housing building or block constructs a company type of community which manages all the mutual causes of the building, such as: staircases, yard areas, large renovations etc.) are evaluated. Buildings made of bricks and those with plaster coating are more appreciated than prefabricated buildings. The cardinal directions are determined, for instance, if there is a balcony in the apartment it is better if it is headed to west - since people usually want to enjoy the evening sun. It is not easy to determine the direct influence of existence of elevator to the price of apartment. Although it can be stated that it is easier to sell an apartment from the building which has an elevator. For instance, if the building only has three floors the existence of elevator is not important. In principle, elevators are more appreciated in suburbs than in the Jugend style buildings in the city centre. The prices per square meter tend to be hundreds of euros higher in apartments in the Jugend buildings than in the buildings built in the 60s or 70s. The most appreciated apartments are most the oldest ones and the ones recently built. Apartments with a sea view can potentially have even 2,000 euros higher prices per square meter. Regarding the effect of existence of balcony it does not necessarily raise the value in the city centre, but in suburb the positive effect can be over 10,000 euros to the price of apartment. Sauna is a very traditional part of Finnish homes yet the appreciation of sauna is decreasing among Finns. There are more and more people who use their sauna mainly as a storage space. However the sauna can lift the price of an apartment even with 15,000 euros. The floor can also be a significant pricing factor. For instance, in larger sized 2-room apartments the value can raise 7,000 – 20,000 euros per floor. That is a measure examined in the purchases of newly built buildings and the effect might not be as large in older buildings. On one hand, the top floor is naturally the mostly appreciated and if the apartment contains a rooftop terrace the price per sqm can be proportionally very large. On the other hand, even if the existence of terrace or own garden improves the comfortability, their possible influences to the price is not proven. As a conclusion, there are the factors which have or can have positive effect to the price of an apartment (relatively large, 60 sqm, 2-room apartment is used as an example) (Vilén 2015).

Direct factors:

- balcony 10,000 – 15,000 €
- sauna in apartment 15,000 €
- floor (new buildings) 7,000 – 20,000 € / floor, when going upward
- sea view 2,000 €/ sqm
- views towards west (evening sun) 10,000 €

Indirect factors which facilitate the sale of apartment:

- high quality surface materials (parquet, wood floor, tiles)
- connections and spaces for washing machines
- underfloor heating
- fireplace
- communal sauna in the building
- elevator
- outer surface is either brick or plaster
- shape of base of the apartment

2. METHODOLOGY

2.1 Research sample

First of all, Helsinki is divided into 6 different groups of districts considering their average purchase prices per square meter (Database – Excel Sheets). The aim is to search differences between areas in order to find profitable investment properties. This research explores apartments of either 1,2 or 3 rooms. Larger apartments are not that relevant to examine, since they are not sold that often in all the areas and they usually have more spread size and features than smaller real estates. In total 75 districts were divided into groups – there are 6-28 districts per group. Districts are generally recognized city areas and they typically have their own postal codes. The classification into groups (1-6) is made according their prices per square meter of year 2018. Group 1 includes areas in which the price per square meter has been over 7 000 euros. Group 2 includes areas of 6 000 - 7 000 euros/ sqm. And the rest of the groups follow the same rule respectively until the Group 6 includes all the areas with 3 000 euros/ sqm or less. Next, average price level history by districts is used to calculate the average growth rates of the groups. Average prices, sizes and rent levels are determined using databases which offer information of the latest housing sales district by district. For instance, calculations of Group 3 include 315 latest transactions of apartments which include 1,2 or 3 room apartments. The amount of examined trades depends on the availability of data for each district.

2.2 Yield comparison

Average income statement is constructed for each of the groups. Average sizes, prices, prices/ sqm, average rents/sqm and average rents are calculated from the data concerning the each group. For maintenance cost information, the level of 2017 is used. It is a tricky variable to calculate and it can of course change between years. The level of 2017 is used in this research and it is at least directive amount. General capital gains tax is 30% in Finland and that level is used when constructing the calculations for this research. There are certain possible variations for that depending on the circumstances as well, yet the 30% is the basic tax rate. Yields and annual returns on investments are calculated by dividing the annual return of the average apartment by the price of the apartment at the time of purchase. Annual value appreciation of the apartment is calculated

from the initial data considering the development of price levels of different districts. Total yields consist of both annual return on investment and annual value appreciation.

As (Brown 2005) the usage of historical data can be seen as a way of uncertainty and it is true that there is no any evidence that future can be forecasted, yet the utilization of historical data is proven to be a source for uncounted number of functional forecast models in the fields of real estate, finance and many other.

2.3 Loan comparison

All the largest Finnish banks have loan calculators which are directive. Loan calculator of Osuuspankki (Loan calculator) is used for loan calculations of this research. When examining the interest rate possibilities in Finland, Euribor 12 is clearly the most popular choice to use (Asuntolainalaskuri 2019). It basically predetermines the interest rate for a next year. Today it is possible to get a loan with an interest rate of 1,05%, yet the interest rate levels will probably raise from that, there is also used 100% larger interest rate in this research, 2,1%, to give an image of influence of a little higher interest rate. The prices of average apartments of each group are used to find out the realistic loan figures. In practice there are tools in Finland to finance the whole purchase of an apartment with a loan, yet in general it is possible to get a loan which is 85% of the total price of a property. For that reason, there is used 85%, but also 67,5% and 50% loan amounts are utilized to give a picture of the influences of different factors to the monthly repayment amounts. Monthly contribution amounts are estimate repayments from the loan calculator of Osuuspankki. Monthly surplus/deficit is calculated to give an illustration of the possibly required additional repayment amounts (together with the rental income). If Monthly surplus/deficit shows a negative number, additional monthly contribution is required. All of the calculations are made with a 30-year term which is generally the longest possible loan period provided by Finnish banks.

2.4 Price determinant analysis

As determined earlier, there are many factors which can actually have a significant effect to the price of a real estate. The announcements of sold apartments (in the databases) did not include more information than it is habitual for the realtors to inform. For that reason, the author has chosen to use statistical test to find out only the effects existence sauna and balcony. They are features that

are widely common in Finnish real estates – apartments and houses. It is a common norm that existence of those is mentioned in the apartment announcements. Their contributions to the price are calculated followingly: The average price/ sqm of an apartment without sauna or balcony is determined (let us assume that it is 5,000 euros/ sqm). Then average price/ sqm without sauna or balcony is compared to each apartment with sauna or balcony or both. If there is an apartment with 40 sqm, sauna and price of 240 000 euros – it would have a price of 200,000 euros without a sauna ($5,000 * 40 = 200,000$). Consequently, the positive effect of sauna would be 40,000 euros. As a clarification, the effect is calculated if the property processed contains either sauna or balcony, or both of those. The reason for that is the fact that the data concerning the certain apartment sizes of certain groups did not include enough saunas or balconies that an average effect would have been rational and plausible to calculate. When the comparison is made with all the properties in this research, the average influence will be determined.

3. EMPIRICAL RESULTS

3.1. Yield comparison

Firstly, the regional results of annual value appreciation of the groups are from 2,07% to 4,23% per year. The observed historical data reaches from 2007 to 2018, it includes times before and after the latest worldwide recession (started in 2008-2009) as well. Data includes both types of years, positive and negative growth.

Table 1. Comparison of income statements of example apartments of groups 1 and 6.

	Group 1			Group 6		
	1-room	2-room	3-room	1-room	2-room	3-room
Number of rooms	1-room	2-room	3-room	1-room	2-room	3-room
Average size	32.91	54.83	89.89	32.6	53.17	75.32
Average price	254,315 €	448,410 €	645,243 €	122,190 €	145,751 €	210,760 €
Average price/ sqm	7 728 €	8 179 €	7 178 €	3 748 €	2 741 €	2 798 €
Average rent/ sqm	28.26	23.71	20.6	22.75 €	16.61 €	15.83 €
Average rent	930 €	1,300 €	1,852 €	741.65 €	883.29 €	1,193 €
Maintenance charge /m2	3.96 €	3.96 €	3.96 €	3.96 €	3.96 €	3.96 €
Maintenance charge cost	130.31 €	217.11 €	355.96 €	129.10 €	210.55 €	298.27 €
Gross income	800 €	1,083 €	1,496 €	612.55 €	672.73 €	894.30 €
Capital gains tax (30%)	239.87 €	324.91 €	448.73 €	183.77 €	201.82 €	268.29 €
Net income	560 €	758 €	1,047 €	428.79 €	470.91 €	626.01 €
Annual profit	6,716 €	9,097 €	12,564 €	5,145 €	5,651 €	7,512 €
Annual ROI	2.64 %	2.03 %	1.95 %	4.21 %	3.88 %	3.56 %
Annual value appreciation	4.14 %	4.14 %	4.14 %	2.07 %	2.07 %	2.07 %
Total yield in year 1	6.78 %	6.16 %	6.08 %	6.28 %	5.95 %	5.64 %

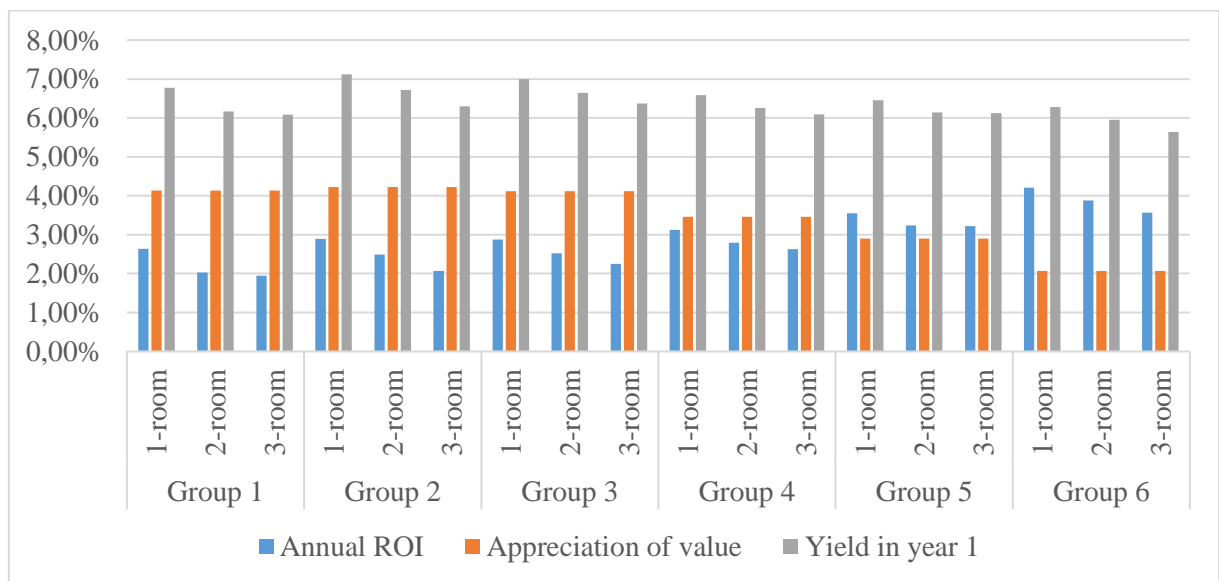
Sources: author's calculations based on data from Appendix 2

As seen in Table 1 the income statements are shown of Group 1 and Group 6 since they have the greatest differences within all sorts of the numbers presented. Average sizes do not differ much in 1-room apartments, but the difference is notable in 3-room apartments. A reason for that is the fact that 3-room apartments in the most expensive areas of Helsinki are truly unreachable for people who do not have yearly incomes of, at least, upper middle class. These apartments can be considered to be almost luxurious when observing the average prices and sizes. The same effect can be found in the average prices of apartments - 3-room apartments are over 3 times more expensive in the areas of Group 1 than in the areas of Group 6. The basic rule in housing market

is that the average prices/ sqm tend to be higher when the apartment itself is smaller. Many factors can effect to data above that the situation is different.

As Table 1 shows, Group 1 types of apartments require larger initial investment which can be a problem for people with lower income level. Yet the Group 1 investment seems to be more profitable. The advantage of Group 1 type of investment seems to be more and more underlined as time passes since the value appreciation will follow the rule of compound interes – the potential return will grow year by year. Investment to Group 1 will not return as large share of the initial investment than investment to Group 6 but especially because real estate investment should be considered as a long term investment the Group 1 apartment brings more value to table. Rental housing market in Helsinki is nowadays quite wild and for that reason 1-room apartments from Group 1 are very hard to get. There are usually tens of times of applicants trying to rent the small apartments from the districts of Group 1. That is a factor which gives an advantage for that group, those would probably be the last areas in Helsinki in which the demand for small apartments would disappear. In addition, in districts of Group 6 the demand is surely lower and the risk of defaults is bigger – areas of Group 6 populate people with lower income. When comparing the groups 1 and 6, the only notable advantage of group 6 might be the lower initial cost of investment. Apartments of Group 1 are generally more valuable, in better shape, their location is much better, they have better views and so on.

Figure 1. Yield comparison



Sources: author’s calculations based on data from Appendix 2

In Figure 1 blue bars are showing the portion of the annual rental income in relation to the initial purchase price of the apartment. Red bars are showing the average appreciation of value in the districts of certain group. Together blue and red bars construct the grey bar which shows the total share of the yield of an apartment in the first year of investment when it is compared to initial purchase price. The illustration shows that the shares of annual ROI and value appreciation are totally different when the groups are compared with each other. Groups with higher average prices/ sqm have a lot lesser share of annual ROI in their total yields in year 1 and again groups with lower average prices/ sqm have a lot smaller portion of value appreciation in their total yields in year 1.

All the groups between 1 and 6 are basically following the proportional trend from the most expensive Group 1 to the cheapest Group 6 according to their average prices/ sqm (Appendix 1). When moving from Group 1 to Group 6, the general trend is that: annual ROI in relation to purchase price grows and value appreciation decreases. There are couple of figures not following that order but they are not mentionably significant.

There were also made calculations of the standings of the groups after certain years, if their annual value appreciation stays as they have been during the last years. The value of possible property investment would be grown significantly in all of the groups yet there are large differences as well. The rough calculations also underline that the groups 1, 2 and 3 will clearly contain way more profitable investment targets on average. A significant fact is that, for instance, Group 1 can be sort of fulfilled large share of its growing potentiality in prices. Especially value appreciation of Group 2 will eventually reach the price level of Group 1, Group 3 will not be far behind either. Many of the districts of the Group 3 are highly appreciated, yet there is far larger share of bigger family apartments than in the groups 1 and 2 – the average price level is then lower in Group 3.

3.2 Loan comparison

The results of loan comparison show significant differences when groups 1 and 6 are chosen in to the following table to illustrate, for instance, the relatively small gap between monthly rental income, yet a large gap in monthly surplus/deficit. It is also notable to pay attention to the total costs of loans when the interest rate shifts.

Table 2. 1-room apartment loan comparison

	Group 1		Group 6	
Interest rate:	1.05 %	2.10 %	1.05 %	2.10 %
Apartment price:	254,315 €	254,315 €	122,190 €	122,190 €
Loan amount:				
85 %	216,168 €	216,168 €	103,861 €	103,861 €
67,50 %	171,662 €	171,662 €	82,478 €	82,478 €
50 %	127,157 €	127,157 €	61,095 €	61,095 €
Monthly rental income:	560 €	560 €	429 €	429 €
Monthly contribution:				
85 %	1,069 €	1,181 €	352 €	407 €
67.50 %	595 €	688 €	280 €	323 €
50 %	441 €	510 €	207 €	240 €
Monthly surplus/deficit:				
85 %	-509 €	-621 €	77 €	22 €
67.50 %	-35 €	-128 €	149 €	106 €
50 %	119 €	50 €	222 €	189 €
Total cost of loan:				
85 %	258070 €	285,001 €	128,024 €	147,863 €
67.50 %	215,814 €	249,346 €	101,836 €	117,591 €
50 %	160,077 €	184,915 €	75,649 €	87,319 €

Sources: author's calculations based on data from Appendix 2

As Table 2 shows, there is a significant difference in the required loan amounts, monthly contributions and total costs of loans between group 1 and 6. If the 85% loan is taken in investment to Group 1 apartment, the monthly repayments are relatively high. Many people could not afford to pay additionally over 500 euros monthly for the loan paybacks. Whereas if a 1-room apartment is bought in the district of group 6, all the different loan examples produce monthly surplus – all the mortgages should be paid back with shorter payback period and larger monthly contributions to make the investments more profitable.

Table 3. 3-room apartment loan comparison

	Group 1		Group 6	
	1.05 %	2.10 %	1.05 %	2.10 %
Apartment Price:	645,243 €	645,243 €	210,760 €	210,760 €
Loan Amount:				
85 %	548,457 €	548,457 €	179,146 €	179,146 €
67,50 %	435,539 €	435,539 €	142,263 €	142,263 €
50 %	322,622 €	322,622 €	105,380 €	105,380 €
Monthly Rental Income	1,047 €	1,047 €	626 €	626 €
Monthly Contribution:				
85 %	1,878 €	2,172 €	609 €	705 €
67.50 %	1,492 €	1,725 €	484 €	560 €
50 %	1,105 €	1,278 €	358 €	415 €
Monthly Surplus/Deficit:				
85 %	-831 €	-1,125 €	17 €	-79 €
67.50 %	-445 €	-678 €	142 €	66 €
50 %	-58 €	-231 €	268 €	211 €
Total Cost of Loan:				
85 %	679,349 €	785,179 €	220,983 €	255,320 €
67.50 %	539,653 €	623,694 €	175,657 €	202,925 €
50 %	399,958 €	462,211 €	130,330 €	150,529 €

Sources: author's calculations based on data from Appendix 2

As Table 3 illustrates, larger apartments clearly require more significant monthly contributions. Again, apartment bought from the districts of Group 6 should be paid sooner than 30 years with higher monthly payments. With this large apartments the loans of Group 1 will be relatively expensive. The deficit in payback amounts of 85% loans (831 and 1,125 euros) are very high figures to be paid in a monthly basis. For that reason, they might not be as attractive investment targets.

3.3 Price determinant analysis

The positive effect of existence of sauna or balcony were evaluated to be up to 15,000 euros to the price of the apartment. Average of the effect in this research is barely over 7,000 euros (Appendix 3). Although the reference also stated that, for instance, existence of balcony would not be that significant in the city centre. The existence was actually affecting negatively to the prices of 1-room apartments with over 3,000 euros on average – this can be seen a sign that saunas are not that appreciated in smaller apartment saunas can really be rather waste space. The existence raised the prices of both 2-room and 3-room apartments, with over 8,500 € and 15,700 € respectively. A certain surprise was that in the group comparison the largest positive effect was towards apartments in districts of Group 1. One explanation for that might be that in those districts are more luxurious apartments, in which, sauna is an important feature to have. Groups 2 and 3 are having a negative effect if the apartment includes a sauna or balcony. Whereas, groups 4, 5 and 6 are experiencing a growth in prices if the property includes sauna or balcony. All in all, the existence of sauna or balcony or both gives a positive effect to the price of an apartment with barely over 7,000 euros on average when observing all the apartments examined in this research.

CONCLUSION

The results are underlining the success of the Groups 1, 2 and 3. Yet the most profitable area to invest in long term, could be Group 2. The central location of the districts is an important factor which is promising that the price levels will not experience reduction in the foremost. With groups 5 and 6 there are couple of worrying facts when observing their chances to be targets of profitable real estate investments. The risk levels are higher when more people with possibility of payment defaults live there due to the lower overall housing price levels and the expected price appreciation is not that high when observing the investment in long term. In the beginning, a property from districts 5 or 6 could be a profitable and reasonable investment: yearly yield is larger and the initial purchase price of the property is lower – the required mortgage and the monthly repayments would be smaller. Yet, when the time goes by, the investments to other groups would yield more, have lower risk levels and be comprehensively better investment decisions.

There are significant differences in monthly loan payback amounts within the groups – generally all of the mortgages of apartments of Group 1 require extra financing on top of the monthly rental income, whereas all of the required payback amounts of loans of Group 6 can be financed with the monthly rental income of the apartment. The future also seems bright for the at least groups 1, 2 and 3, since there is no sign of that their value appreciation would experience any decreases. It is possible or even probable that districts of group 2 and 3 will gather even larger yearly appreciation figures since their areas have space and potentiality to get growth in population and they have space for new buildings which increase the value of those areas. Group 4 can also be seen in a relatively strong position even if it does not have that high yearly value appreciation. Most of the districts in Group 4 are either relatively old and appreciated areas or then areas which include more recently built housing base. Their locations generally still gives them an advantage against groups 5 and 6.

The section concerning the price determinants was an interesting one. It would have been a goal to produce more wide and comprehensive statistical test for the effects of price determinants. Regrettably the statistical test measuring the prices of apartments with features was only able possible to run with apartments with sauna or balcony or both. The notable and positive result was that there actually was a same type of an effect that one of the references stated. There would be a significant and engrossing area to examine what kind of effects would some other features have to

the apartment prices. It was also found that the existence of sauna or balcony was notable in some areas and apartment size classes, yet in some areas and size classes the effect was also negative. Is there really a widely true positive effect with this sort of features?

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APPENDICES

Appendix 1. Income statements

Appendix 1.1.

Group 1	1-room	2-room	3-room
Average size	32.9	54.8	89.9
Average price	254,315 €	448,410 €	645,243 €
Average price / m2	7,728 €	8,179 €	7,178 €
Average rent /m2	28 €	24 €	21 €
Average rent	930 €	1,300 €	1,852 €
Maintenance charge /m2	3.96 €	3.96€	3.96 €
Maintenance charge cost	130 €	217 €	356 €
Gross income	800 €	1,083 €	1,496 €
Capital gains Tax (30%)	240 €	325 €	449 €
Net income	560 €	758 €	1,047 €
Annual Yield	6716	9097	12564
Annual ROI	264 %	2.03 %	1.95 %
Annual appreciation of value	4.14 %	4.14 %	4.14 %
Total yield /year	6.78 %	6.16 %	6.08 %

Appendix 1.2.

Group 2	1-room	2-room	3-room
Average size	31.7	51.1	77.5
Average price	215,000 €	316,536 €	505,947 €
Average price / m2	6,783 €	6,194 €	6532 €
Average rent /m2	27 €	22 €	20 €
Average rent	867 €	1,140 €	1,554 €
Maintenance charge /m2 (2017)	3.96 €	3.96 €	3.96 €
Maintenance charge cost	126 €	202 €	307 €
Gross income	741 €	938 €	1,248 €
Capital gains Tax (30%)	222 €	281 €	374 €
Net income	519 €	657 €	873 €
Annual Yield	6,225 €	7,879 €	10,479 €
Annual ROI	2.90 %	2.49 %	2.07 %
Annual appreciation of value	4.23 %	4.23 %	4.23 %
Total yield /year	7.12 %	6.72 %	6.30 %

Appendix 1.3.

Group 3	1-room	2-room	3-room
Average size	30.2	515	71.1
Average price	196,610 €	287,149 €	394,193 €
Average price / m2	6,518 €	5,578 €	5,546 €
Average rent /m2	26 €	21 €	19 €
Average rent	792 €	1,067 €	1,336 €
Maintenance charge /m2 (2017)	3.96 €	3.96 €	3.96 €
Maintenance charge cost	119 €	204 €	281 €
Gross income	672 €	863 €	1,055 €
Capital gains Tax (30%)	202 €	259 €	316 €
Net income	471 €	604 €	738 €
Annual Yield	5,648 €	7,252 €	8,860 €
Annual ROI	2.87 %	2.53 %	2.25 %
Annual appreciation of value	4.12 %	4.12 %	4.12 %
Total yield /year	6.99 %	6.65 %	6.37 %

Appendix 1.4.

Group 4	1-room	2-room	3-room
Average size	32.4	51.0	72.1
Average price	180,917 €	243,069 €	323,748 €
Average price / m2	5,578 €	4,767 €	4,91 €
Average rent /m2	25 €	20 €	18 €
Average rent	801 €	1,010 €	1,298 €
Maintenance charge /m2 (2017)	3.96 €	3.96 €	3.96 €
Maintenance charge cost	128 €	202 €	285 €
Gross income	672 €	808 €	1,013 €
Capital gains Tax (30%)	202 €	242 €	304 €
Net income	471 €	565 €	709 €
Annual Yield	5,648 €	6,785 €	8,509 €
Annual ROI	3.12 %	2.79 %	2.63 %
Annual appreciation of value	3.46 %	3.46 %	3.46 %
Total yield /year	6.58 %	6.25 %	6.09 %

Appendix 1.5.

Group 5	1-room	2-room	3-room
Average size	29.8	51.1	72.0
Average price	139,134 €	185,508 €	244,080 €
Average price / m2	4,676 €	3,632 €	3,390 €
Average rent /m2	24 €	18 €	17 €
Average rent	707 €	918 €	1,221 €
Maintenance charge /m2 (2017)	3.96 €	3.96 €	3.96 €
Maintenance charge cost	118 €	202 €	285 €
Gross income	589 €	716 €	936 €
Capital gains Tax (30%)	177 €	215 €	281 €
Net income	412 €	501 €	655 €
Annual Yield	4,945 €	6,012 €	7,861 €
Annual ROI	3.55 %	3.24 %	3.22 %
Annual appreciation of value	2.90 %	2.90 %	2.90 %
Total yield /year	6.46 %	6.14 %	6.12 %

Appendix 1.6.

Group 6	1-room	2-room	3-room
Average size	32.6	53.2	75.3
Average price	122,190 €	145,751 €	210,760 €
Average price / m2	3,748 €	2,741 €	2,798 €
Average rent /m2	22,75 €	16,61 €	15,83 €
Average rent	742 €	883 €	1,193 €
Maintenance charge /m2 (2017)	3,96 €	3,96 €	3,96 €
Maintenance charge cost	129 €	211 €	298 €
Gross income	613 €	673 €	894 €
Capital gains Tax (30%)	184 €	202 €	268 €
Net income	429 €	471 €	626 €
Annual Yield	5,145 €	5,651 €	7,512 €
Annual ROI	4.21 %	3.88 %	3.56 %
Annual appreciation of value	2.07 %	2.07 %	2.07 %
Total yield /year	6.28 %	5.95 %	5.64 %

Sources: ARA (2019); Asuntojen hinnat (2019); Kiinteistömaailma (2019); author's calculations

Appendix 2. Loan calculations

Appendix 2.1.

	1-room		2-room		3-room	
Group 1	1.05 %	2.10 %	1.05 %	2.10 %	1.05 %	2.10 %
Apartment Price:	254,315 €	254,315 €	448,410 €	448,410 €	645,243 €	645,243 €
Loan Amount:						
85 %	216,168 €	216,168 €	381,148 €	381,148 €	548,457 €	548,457 €
67.50 %	171,662 €	171,662 €	302,676 €	302,676 €	435,539 €	435,539 €
50 %	127,157 €	127,157 €	224,205 €	224,205 €	322,622 €	322,622 €
Monthly Rental Income	560 €	560 €	758 €	758 €	1,047 €	1,047 €
Monthly Contribution:						
85 %	1,069 €	1,181 €	1,126 €	1,303 €	1,878 €	2,172 €
67.50 %	595 €	688 €	895 €	1,035 €	1,492 €	1,725 €
50 %	441 €	510 €	663 €	766 €	1,105 €	1,278 €
Monthly Surplus/Deficit:						
85 %	-509 €	-621 €	-368 €	-545 €	-831 €	-1,125 €
67.50 %	-35 €	-128 €	-137 €	-277 €	-445 €	-678 €
50 %	119 €	50 €	95 €	-8 €	-58 €	-231 €
Total Cost of Loan:						
85 %	258,070 €	285,001 €	407,754 €	471,223 €	679,349 €	785,179 €
67.50 %	215,814 €	249,346 €	323,975 €	374,376 €	539,653 €	623,694 €
50 %	160,077 €	184,915 €	240,196 €	277,531 €	399,958 €	462,211 €

Appendix 2.2.

	1-room		2-room		3-room	
Group 2	1.05 %	2.10 %	1.05 %	2.10 %	1.05 %	2.10 %
Apartment Price:	215,000 €	215,000 €	316,536 €	316,536 €	505,947 €	505,947 €
Loan Amount:						
85 %	182,750 €	182,750 €	269,056 €	269,056 €	430,055 €	430,055 €
67.50 %	145,125 €	145,125 €	213,662 €	213,662 €	341,515 €	341,515 €
50 %	107,500 €	107,500 €	158,268 €	158,268 €	252,974 €	252,974 €
Monthly Rental Income	519 €	519 €	657 €	657 €	873 €	873 €
Monthly Contribution:						
85 %	581 €	672 €	854 €	988 €	1,429 €	1,652 €
67.50 %	461 €	534 €	678 €	784 €	1,135 €	1,312 €
50 %	342 €	395 €	502 €	581 €	840 €	972 €
Monthly Surplus/Deficit:						
85 %	-62 €	-153 €	-197 €	-331 €	-556 €	-779 €
67.50 %	58 €	-15 €	-21 €	-127 €	-262 €	-439 €

50 %	177 €	124 €	155 €	76 €	33 €	-99 €
Total Cost of Loan:						
85 %	210,721 €	243,459 €	309,309 €	357,423 €	516,954 €	597,455 €
67.50 %	167,507 €	193,505 €	245,798 €	284,006 €	410,693 €	474,620 €
50 %	124,295 €	143,552 €	182,287 €	210,589 €	304,431 €	351,785 €

Appendix 2.3.

	1-room		2-room		3-room	
Group 3	1.05 %	2.10 %	1.05 %	2.10 %	1.05 %	2.10 %
Apartment Price:	196,610 €	196,610 €	287,149 €	287,149 €	394,193 €	394,193 €
Loan Amount:						
85 %	167,118 €	167,118 €	244,076 €	244,076 €	335,064 €	335,064 €
67.50 %	132,712 €	132,712 €	193,825 €	193,825 €	266,081 €	266,081 €
50 %	98,305 €	98,305 €	143,574 €	143,574 €	197,097 €	197,097 €
Monthly Rental Income	471 €	471 €	604 €	604 €	738 €	738 €
Monthly Contribution:						
85 %	530 €	613 €	812 €	940 €	1,055 €	1,220 €
67.50 %	421 €	487 €	645 €	746 €	838 €	969 €
50 %	312 €	361 €	478 €	553 €	620 €	717 €
Monthly Surplus/Deficit:						
85 %	-59 €	-142 €	-208 €	-336 €	-317 €	-482 €
67.50 %	50 €	-16 €	-41 €	-142 €	-100 €	-231 €
50 %	159 €	110 €	126 €	51 €	118 €	21 €
Total Cost of Loan:						
85 %	192,274 €	222,135 €	294,330 €	340,108 €	381,810 €	441,232 €
67.50 %	152,859 €	176,571 €	233,903 €	270,256 €	303,372 €	350,560 €
50 %	113,443 €	131,008 €	173,477 €	200,405 €	224,934 €	259,889 €

Appendix 2.4.

	1-room		2-room		3-room	
Group 4	1.05 %	2.10 %	1.05 %	2.10 %	1.05 %	2.10 %
Apartment Price:	180,917 €	180,917 €	243,069 €	243,069 €	323,748 €	323,748 €
Loan Amount:						
85 %	153,779 €	153,779 €	206,608 €	206,608 €	275,186 €	275,186 €
67.50 %	122,119 €	122,119 €	164,071 €	164,071 €	218,530 €	218,530 €
50 %	90,458 €	90,458 €	121,534 €	121,534 €	161,874 €	161,874 €
Monthly Rental Income	471 €	471 €	565 €	565 €	709 €	709 €
Monthly Contribution:						
85 %	512 €	592 €	674 €	779 €	903 €	1,044 €
67.50 %	407 €	470 €	535 €	619 €	717 €	829 €
50 %	301 €	348 €	396 €	458 €	531 €	614 €

Monthly Surplus/Deficit:						
85 %	-41 €	-121 €	-109 €	-214 €	-194 €	-335 €
67.50 %	64 €	1 €	30 €	-54 €	-8 €	-120 €
50 %	170 €	123 €	169 €	107 €	178 €	95 €
Total Cost of Loan:						
85 %	185,834 €	214,689 €	244,214 €	282,176 €	327,028 €	377,905 €
67.50 %	147,744 €	170,659 €	194,106 €	224,252 €	259,868 €	300,271 €
50 %	109,654 €	126,628 €	143,997 €	166,327 €	192,710 €	222,638 €

Appendix 2.5.

	1-room		2-room		3-room	
Group 5	1.05 %	2.10 %	1.05 %	2.10 %	1.05 %	2.10 %
Apartment Price:	139 134 €	139 134 €	185 508 €	185 508 €	244 080 €	244 080 €
Loan Amount:						
85 %	118,264 €	118,264 €	157,682 €	157,682 €	207,468 €	207,468 €
67.50 %	93,916 €	93,916 €	125,218 €	125,218 €	164,754 €	164,754 €
50 %	69,567 €	69,567 €	92,754 €	92,754 €	122,040 €	122,040 €
Monthly Rental Income	412 €	412 €	501 €	501 €	655 €	655 €
Monthly Contribution:						
85 %	387 €	447 €	494 €	572 €	651 €	753 €
67.50 %	307 €	355 €	392 €	454 €	517 €	598 €
50 %	228 €	263 €	291 €	336 €	383 €	443 €
Monthly Surplus/Deficit:						
85 %	25 €	-35 €	7 €	-71 €	4 €	-98 €
67.50 %	105 €	57 €	109 €	47 €	138 €	57 €
50 %	184 €	149 €	210 €	165 €	272 €	212 €
Total Cost of Loan:						
85 %	140,573 €	162,369 €	179,340 €	207,183 €	236,158 €	272,862 €
67.50 %	111,803 €	129,112 €	142,588 €	164,699 €	187,708 €	216,856 €
50 %	83,031 €	95,853 €	105,835 €	122,213 €	139,258 €	160,849 €

Appendix 2.6.

	1-room		2-room		3-room	
Group 6	1.05 %	2.10 %	1.05 %	2.10 %	1.05 %	2.10 %
Apartment Price:	122,190 €	122,190 €	145,751 €	145,751 €	210,760 €	210,760 €
Loan Amount:						
85 %	103,861 €	103,861 €	123,888 €	123,888 €	179,146 €	179,146 €
67.50 %	82,478 €	82,478 €	98,382 €	98,382 €	142,263 €	142,263 €
50 %	61,095 €	61,095 €	72,875 €	72,875 €	105,380 €	105,380 €

Monthly Rental Income	429 €	429 €	471 €	471 €	626 €	626 €
Monthly Contribution:						
85 %	352 €	407 €	423 €	489 €	609 €	705 €
67.50 %	280 €	323 €	336 €	388 €	484 €	560 €
50 %	207 €	240 €	249 €	288 €	358 €	415 €
Monthly Surplus/Deficit:						
85 %	77 €	22 €	48 €	-18 €	17 €	-79 €
67.50 %	149 €	106 €	135 €	83 €	142 €	66 €
50 %	222 €	189 €	222 €	183 €	268 €	211 €
Total Cost of Loan:						
85 %	128,024 €	147,863 €	153,519 €	177,334 €	220,983 €	255,320 €
67.50 %	101,836 €	117,591 €	122,083 €	140,995 €	175,657 €	202,925 €
50 %	75,649 €	87,319 €	90,646 €	104,655 €	130,330 €	150,529 €

Sources: ARA (2019); Asuntojen hinnat (2019); Kiinteistömaailma (2019); Osuuspankki (2019); author's calculations

Appendix 3. Price determinant test

	Contribution of existence of sauna or balcony or both:			Average:
	1-room	2-room	3-room	
Group 1	-42 251.95 €	60 242.67 €	104 851.02 €	40 947.24 €
Group 2	7 604.50 €	-11 743.13 €	-39 709.49 €	-14 616.04 €
Group 3	-3 830.64 €	-11 589.94 €	-11 847.64 €	-9 089.41 €
Group 4	21 982.13 €	838.17 €	28 252.82 €	17 024.37 €
Group 5	-5 799.11 €	8 024.27 €	138.05 €	787.74 €
Group 6	3 435.09 €	5 535.85 €	12 602.79 €	7 191.24 €
Average:	-3 143.33 €	8 551.31 €	15 714.59 €	7 040.86 €

Sources: ARA (2019); Asuntojen hinnat (2019); Kiinteistömaailma (2019); author's calculation