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PROFITABILITY OF REAL ESTATE INVESTMENT IN FINLAND

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

The aim of this thesis is to provide an insight in Finnish residential real estate market and find out the most important aspects to consider before making an investment in real estate. The aim of the empirical part is to determine what has been the most profitable city to invest in small rental apartments among Helsinki, Turku and Kuopio between 2010 and 2018 and how much the profitability differs between single and two-room apartments. Also, estimating the profitability of specific apartments listed on sale is done. The results of the empirical part indicate that Kuopio has been the most profitable city in terms of rental returns while Helsinki has offered the highest capital appreciations. However, Turku has been the most profitable city to invest in measured by total returns. Single-room apartments have been clearly more profitable than two-room apartments in all cities. The estimations of the specific apartments indicate that the single-room apartment in Kuopio would generate the highest total returns in future.

Keywords: Real estate, apartment, profitability, rent, returns, capital appreciation, rental returns

INTRODUCTION

Urbanization has become a global trend as increasing amounts of people have been moving to bigger cities and growth centers. Urbanization has been strong also in Finland as well that has been fueling the development of Finnish real estate markets. Long lasting weak development of Finnish economy has raised uncertainty about employment and future incomes that has been supporting the decreasing popularity of living in owned apartments. Especially, younger people prefer more often living in rent due to its flexible nature that is valued a lot in changing environment. Generally, the demand of rental apartments has been increasing especially in the bigger cities and growth centers in recent years that has made real estate investing quite popular topic in daily discussions. While stock markets are easily perceived as confusing and abstract among regular people, real estate investing is more concretize and simple to understand. Banks are happy to lend money for real estate investments due to high collateral values that reduces the need of own capital. Cash flows are predictable, and risks are considered as manageable. Combining these elements with the low interest rates, real estate investing has become attractive and popular way to grow personal wealth.

Despite of the increasing popularity of real estate investing, the general information regarding the real estate market and the most important aspects to consider before making a real estate investment is quite fragmented. Availability of researches considering the profitability of different cities and more specifically the different parts of the cities are surprisingly scarce. In addition, as the market is developing continuously, many of the old researches are not relevant anymore. Also, majority of the discussions on real estate investing focus mostly on investing in single-room apartments due to their lower acquisition prices, expenses and risks. However, as the market has been developing significantly in recent years, the prices of single-room apartments have almost reached the level of two-room apartments in some cities and areas. Consequently, it is not undisputed whether single-room apartments are actually more profitable investments than two-room apartments at the current market situation.

The aim of the theoretical part of this thesis is to find out the previous and current trends of Finnish real estate market and what are the most important aspects to consider before making a real estate investment. The empirical part aims to find out what are the most profitable cities among the sample and how much the profitability differs between single and two-room apartments in terms of rental returns, capital appreciations and total returns between 2008 and 2010. In addition to the average calculations, the profitability of some specific apartments in each area will be estimated. The sample cities chosen for this thesis are Helsinki, Turku and Kuopio.

Achieving the aim of the theoretical part this thesis requires delving into relevant literature and publications including data collection and analysis. The empirical part requires relevant data collection, analysis and calculations. The calculations are based on widely used formulas in this field. The profitability is measured by rental returns, capital appreciation and total returns. For the specific apartments, appropriate estimates are done.

The first chapter and its subchapters focus on the theoretical part covering the previously mentioned topics. It starts by going through the main characteristics of real estate investment followed by the market overview. The process of buying an apartment is explained before reviewing the risks and the tools for risk management. The second chapter introduces how to measure the profitability of real estate investment and gives more specific overview on how and what data were collected. The overview on the data collection is divided into two parts, one considers the data regarding rental returns and the other one capital appreciation. The fourth chapter shows the results of the calculations including appropriate analysis. The conclusion and list of references can be found in the end of this thesis.

1. INVESTING IN REAL ESTATE

In this chapter the major theoretical frameworks considering real estate market and investing is discussed. Firstly, the main characteristics of real estate investing is covered following by the market overview to provide better understanding about the most important trends and factors in Finnish real estate markets. After that, process of buying an apartment is explained and all the main risks reviewed.

1.1. Main characteristics of real estate investment

According to Corb and Giovangelo “Real estate includes the definition of land as well as all natural and man-made improvements that are affixed (permanently attached) to the land. In practice, the term “real estate” is used synonymously with the term “realty” and “real property” to describe the land, improvements, rights, and incidents of ownership” (2014, 1-1). Brueggeman and Fisher have divided real estate into two main categories, residential and non-residential real estate. Residential real estate includes detached houses and block of flats that can be owner occupied or rental properties. Non-residential real estate could be for instance, office, retail and industrial properties whereas the purpose of residential real estate is to provide homes for individuals and families (2010, 254-255). This thesis focuses only on residential real estate and non-residential real estate is not discussed in further detail. The word “real estate” is used to refer only to residential real estate in this thesis.

Real estate investment is usually perceived as low-risk method to gain wealth with relatively low effort. There are multiple different strategies to invest in real estate, but the most popular strategy is buy-to-rent investing. The basic idea is that an investor buys an apartment and put it on rent. A tenant who lives in the apartment pays rent to the investor. If the investor uses borrowed capital (leverage), the goal is to be able to cover the monthly mortgage and interest expenses by the rental income paid by a tenant. The optimal scenario is that a tenant pays off the whole mortgage and the

investor will then fully own the apartment. However, buy-to-rent investing is long-term commitment and without appropriate market research and general understanding about the relevant factors, the investment can turn to be very unsuccessful.

A real estate investment can be done either directly or indirectly. Direct investment refers to buying a property or shares of an apartment house company while indirect real estate investment usually refers to invest in different real estate trusts or companies. The profits of direct investments are formed from rental income and capital appreciation (RAKLI). This thesis will only consider direct investments, and more specifically, investments in shares of apartment house companies. The legal definition of an apartment house company is a limited liability company which prescribed purpose of its articles of association is to own or administer a part of a building or property where at least half of the total floor surface area has been prescribed to be apartments under shareholders' administration. Every share of an apartment house company gives a right to administer an apartment or other part of the apartment house company or property prescribed in the articles of association (AO §2). Generally, a shareholder is responsible of taking care of everything inside the apartment while an apartment house company is responsible of taking care of the areas outside the apartments including overall maintenance and minor repairs. However, some of the problems inside an apartment can be still under apartment house company's responsible for instance, pipe-line wiring and structural problems (Terho, 757).

There are several reasons why people prefer investing in real estate. Rental apartments generate stable cash flows that also tend to grow over time. Not many other investment instruments can do the same. Historically the price development of apartments has been relatively stable, and the market fluctuation has been much more moderate than in stock markets. Due to increasing cash flows and stable price development banks offer leverage much easier than for other instruments. In fact, the collateral values of apartments are usually 70-80% which means that use of leverage will raise the profits on a level that is hard to beat. Purchasing or selling an apartment includes lots of emotions that enables mistakes in pricing that investor could utilize. Unlike in stock markets, real estate investor can actually affect the level of returns, starting by choosing a location of an apartment, following with choosing a specific apartment from a specific apartment house company. After that the possible renovation needs are determined, and suitable tenant is selected. An investor can also attend to shareholders meetings or even become a board member. However, real estate investing is not for everyone. A successful real estate investment requires understanding

of local markets, other general knowledge, starting capital and effort (Orava & Turunen, 2016, 2-5).

1.2. Real estate market in Finland

Urbanization has been strong in the previous years and the trend is expected to continue. According to the report of Pellervon Taloustutkimus (PTT) which is Finnish independent applied economics research institute, fast urbanization is currently the main driving force of real estate markets. In growth centers, demand and construction is strong, population is increasing, and prices are going up. However, urbanization divides the real estate market to winners and losers because in areas where population is declining, the supply exceeds the demand and the apartment prices are depreciating (2019).

In 2018, Finnish population was 5,518,000 persons and the total number of households was around 2,680,000. The number of one and two-person households has been increasing for decades. Currently, they are the most common sized households in Finland as 76% of all households consist of either one or two persons. The proportion of one-person households from all households in 2017 was 1,162,000 or 43% whereas the proportion of two-person households was 884,400 or 33%. The average size of all households has decreased from 3 person in 1970 to 2.01 person in 2017 (Statistics Finland 1).

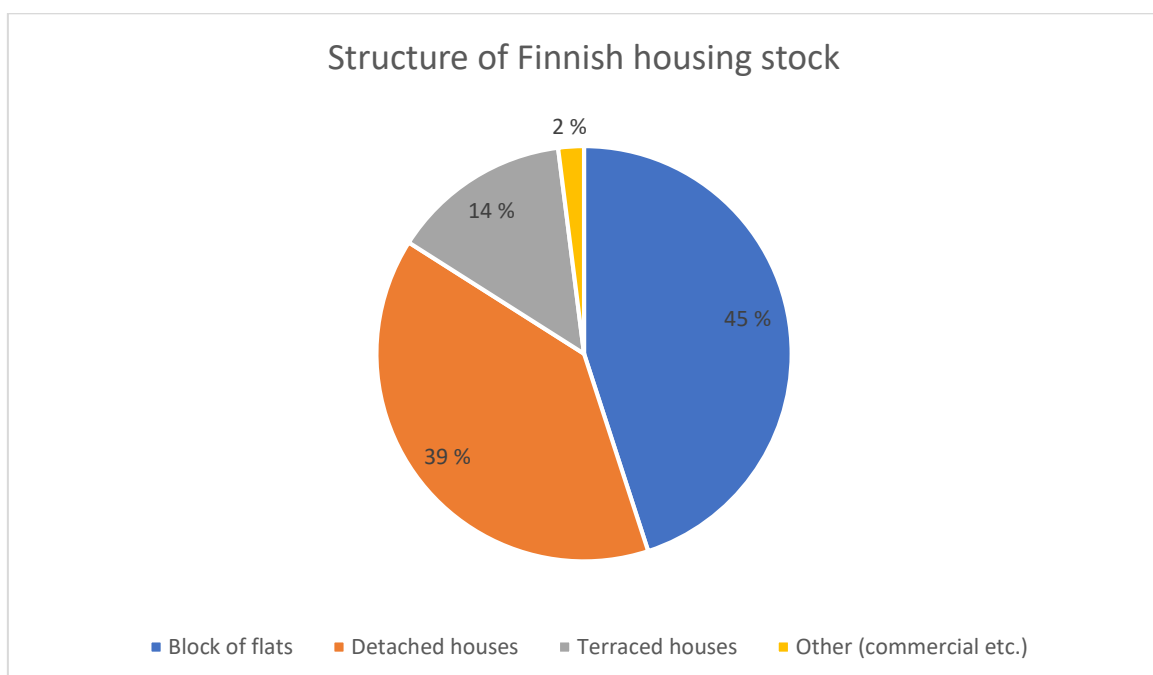


Figure 1. Structure of Finnish housing stock in 2017. Source: Statistics Finland 2. Created by Author.

Figure 2 presents the structure of Finnish housing stock in 2017. The most common type of residential property was block of flats with approximately 1,215,000 apartment units which is 45% of all permanently occupied dwellings in Finland. The second most common type of properties were detached and semi-detached houses with 1,050,000 units or 39% proportion while terraced houses totaled 365,000 units being 14% of the total housing stock.

In 2018, the total number of rental apartments was 854,000. Popularity of living in rent has been previously this high in 1970s. The increasing popularity showed its first signals in 1990s when the percentage of household-dwelling units living in rent increased from 26% to 32% by 2000. The trend was more composed during 2000s but since 2010, the popularity of living in rent has been increasing again and about 33% of all households lived in rent in 2018. In Helsinki, household-dwelling units living in rent have already exceeded the number of units living in owner-occupied flats (PTT, 2019).

Households living in rent consist of very diversified and heterogenous group of people. However, younger people with lower socioeconomic classes tend to prefer more often living in rent compared to higher classes. Based on the stages of life, living in rent is the most popular among under 35-year old one-person households as over 76% of them live in rent. The second most popular group is under 35-year old childless couples as over 65% live in rent. However, it is the most unpopular among couples with slightly over and under 18-years old children at rate of 9,3% and among over 64-years old childless couples at 8.1% (Statistics Finland 2).

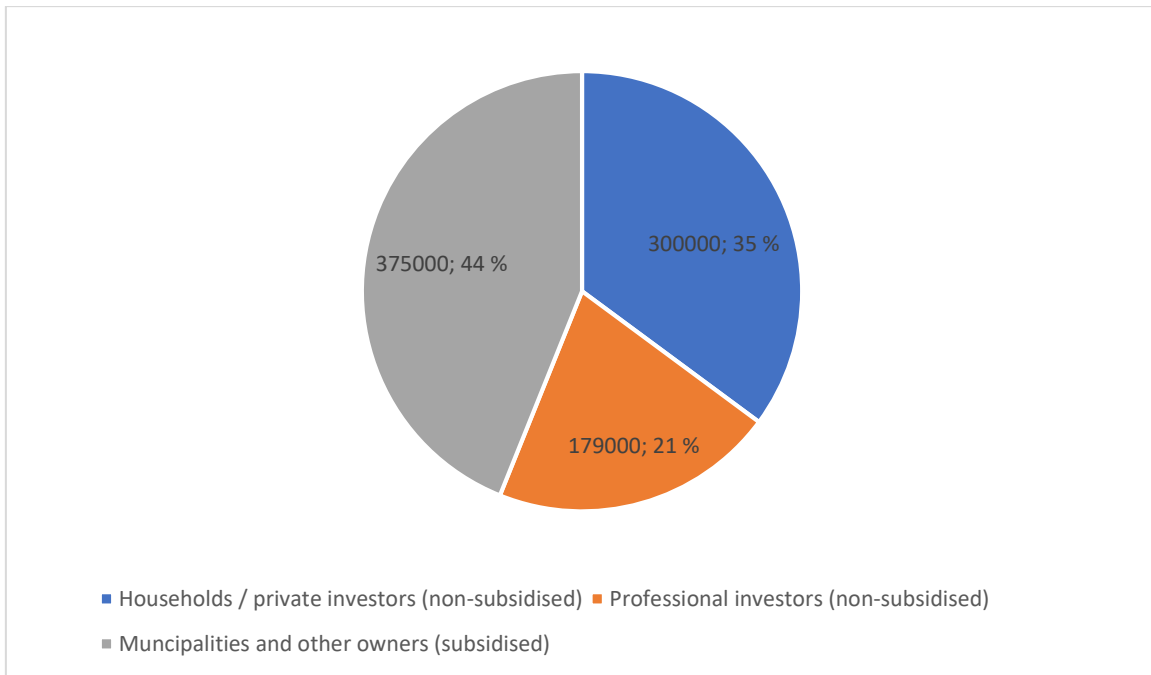


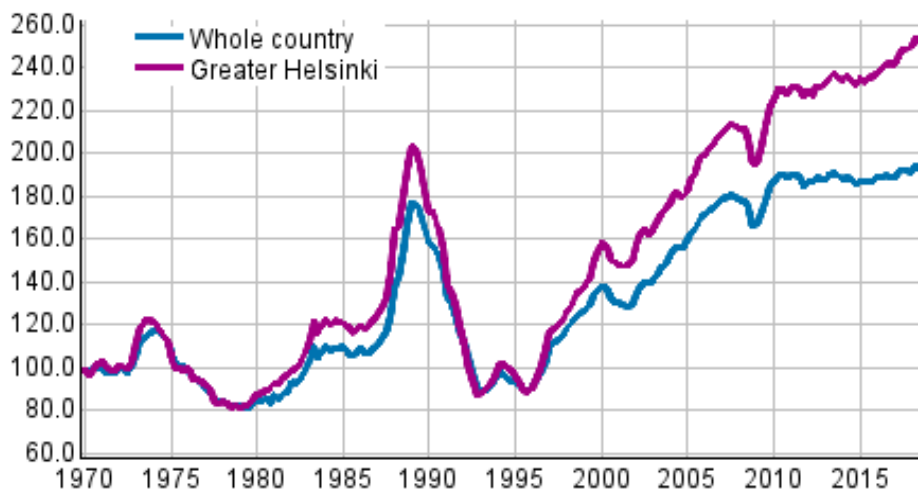
Figure 2. Ownership structure of rental apartments in Finland in 2018. Source: KTI.

Rental dwellings can be either government-subsidized or non-subsidized. As the figure 3 shows, 479,000 or 56% out of the total 854,000 rental dwellings were non-subsidized based on the report of Kiinteistötieto Oy (KTI), which is an independent information business operating in Finnish real estate sector. The government-subsidized dwellings are financed by Asumisen rahoitus -ja kehittämiskeskus (ARA) which is the Housing Finance and Development Centre of Finland. Most of the government-subsidized dwellings are owned by municipalities. They are rented out according to specific legislation and the selection of tenants is based on social and economic factors like need, wealth and income (ARA). The rents of subsidized dwellings are relatively cheaper than with non-subsidized dwellings. Non-subsidized dwellings are owned by private investors and the selection of tenant is not restricted by legislation. Rental levels are determined naturally by supply and demand. Therefore, this thesis focuses only on non-subsidized dwellings, and more specifically, on apartments in old block of flats due to their cheaper prices compared to new properties.

The proportion of non-subsidized dwelling stock has been increasing significantly in recent years. From 2005 to 2017 the stock of non-subsidized dwellings has increased by 43% while subsidized dwellings have decreased by 16%. The main reason behind that have been mainly the new

construction but also the fact that the amount of subsidized stock has been decreasing through the termination of restrictions. Finnish households and all type of professional investors for instance, institutions, property companies, funds and foreign investors have been increasing their investments in Finnish rental housing market in the recent years (KTI, 2018).

Based on a survey executed by Suomen Vuokranantajat ry in 2017, Finnish private landlords are quite equally both males and females. Approximately 25% reported their annual income to be under 50,000€ and 43% reported it to be 50,000-99,999€ while the average annual income was 29,540€ among all Finnish taxpayers in 2017. 63% of all respondents owned 1-2 rental apartments and only 3% owned over 10 rental apartments (Suomen Vuokranantajat, Statistics Finland 3). The main reason for investing in rental apartments was either its profitability or saving for retirement comprising 68% of all respondents. 33% of respondents told their gross rental returns to be from 3% to 5% while 28% told them to be from 5% to 7%. Only 8% of all respondents had the profit margin between 7% and 9% (Suomen Vuokranantajat).



*Preliminary data for the year 2018

Figure 3. Real Price Index of dwellings in old blocks of flats 1970=100. Source: Statistics Finland 4.

As Figure 3 presents, the prices of old dwellings in block of flats were all time high in 2017. Considering the history of housing prices there has been some serious turbulence along the way. The first major drop in housing prices occurred in 1970s because of the recession followed by the oil crises. Conversely, from 1980 to 1989 the price development was extremely rapid. The fast

climb in prices was due to the financial deregulation in 1980 (Oikarinen, 2007, 60). However, shortly after the peak, the bubble burst and prices came down for three years due to the deep recession in Finland which started in 1990. During the drop, the prices of old dwellings halved. Since 1996, the prices developed clearly until the minor drop of financial crisis in 2008. In the past 10-years, the development of apartment prices has been high especially in Greater Helsinki and in other main growth centers but very moderate on country level and even negative in areas with declining population.

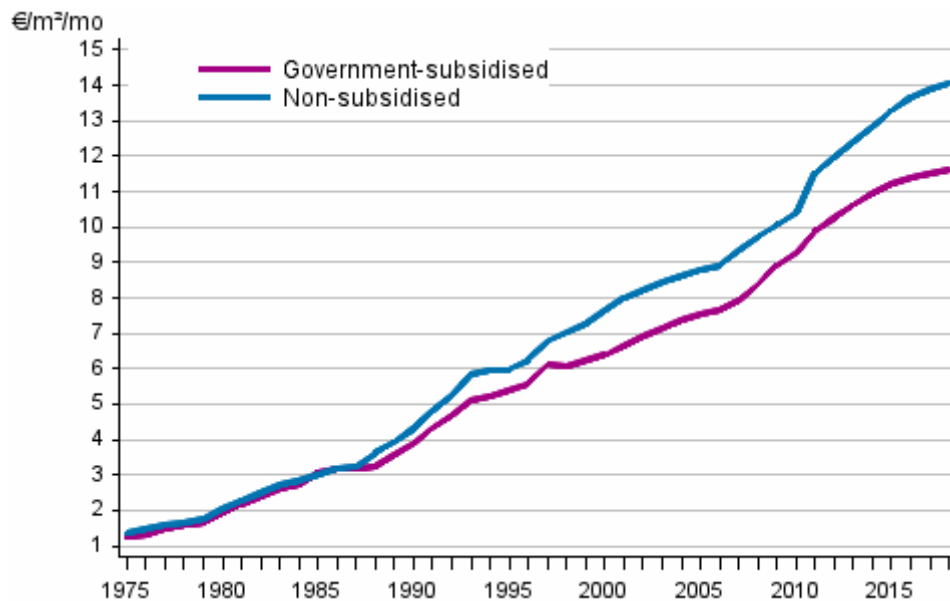


Figure 5. Development of average rents per square meter (€/m²/month) in the whole country 1975–2018. Source : Statistics Finland 5.

As shown in figure 5, rental levels have been increasing for decades. However, it is only relevant to consider the period from 1995 onwards when rental regulatory ended that used to limit the markets. After 1995, rent levels have been increasing yearly by 3,6% on average. Decrease of nominal rental levels has been rare being happened only three times in the past 21-years (Orava & Turunen, 2016, 26). The growth has been the fastest in the biggest cities where rental and acquisition prices are clearly higher than in smaller cities. However, the figure 5 shows that real estate investors who invest for cash flows generally do not need to be afraid of fluctuations in apartment prices as rental returns are not directly dependent on them. In fact, while economic recession forces people to sell their homes, they must live somewhere. Therefore, the rental levels increased even during the 1990s deep recession and financial crisis in 2008 (Brotherus, 2017).

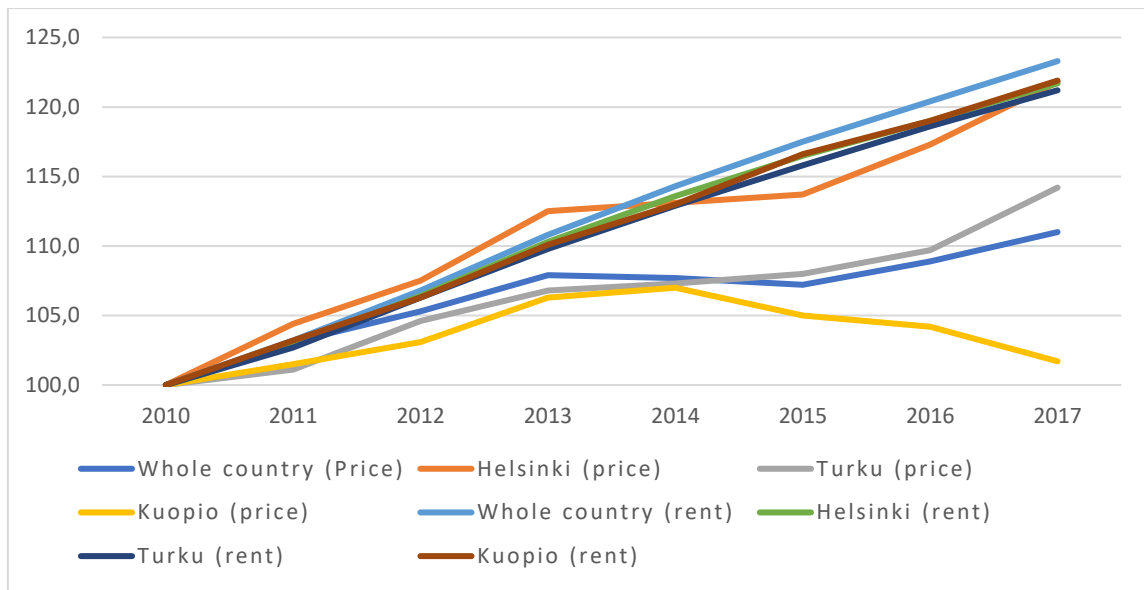


Figure 5. Price and rent indices of apartment rents and prices in old block of flats, 2010-2018. Source: Statistic Finland 6. Created by author.

Taking a bit closer look on the price and rent development in more recent years in figure 5, rental levels of non-subsidized apartments have increased more than the prices. However, in last years the price increase have been more aggressive in the main growth centers like in Helsinki and Turku. In addition, the prices have increased in some areas on a level where renting is for many people the only access for those locations (PTT 2). Another important fact is that the average rental levels have been increasing faster than the average incomes. The demand of rental apartments and the increase in rents can be explained also by the general uncertainty of development of employment rates. Also, the tightened credit conditions of banks have affected the increasing rents (Pekkala, 2016)

In a long-run, demand, rental levels and price levels of apartments are determined by population growth, migration and income development. In a short-run the main determinants are interest rate levels, consumer trust, development in employment rates, availability of finance and investors required rate of returns (Kivistö, 2012). To illustrate the relationship of the main variables in the housing market in a long-run, let`s assume that the market is in balance with a specific sized housing stock. The size of the housing stock determines the rental levels whereas the rental levels determines the apartment prices. The apartment prices reflect to new construction whereas the new construction in turn increases the supply. However, in a short-run the supply is very inelastic as it does not change very fast due to price increase because the building process is slow. Conversely, decline in demand is reflected in the prices quite slowly because the depreciation takes years

(Luukkonen, 2011). During the recent years rents and selling prices have been increasing faster than households' incomes. As the supply is slowly adapting, the increase in incomes raises the rents and prices. Due to the slow development and uncertainty of Finnish economy, the demand of rental apartments has been increasing. Rents are higher in smaller apartments, but the development have been fast also with larger apartments (Alho et al. 2018)

The high demand and growing prices caused a rapid growth of new construction especially with block of flats and smaller apartments a few years back. In 2018, about 30,500 non-subsidized dwellings were built which is 7,9% more than in 2015. Previously that many new dwellings were built in 1991. The increased supply has slightly calmed down the price appreciation in the most booming areas, but the demand is still growing strongly due to urbanization. Conversely, the prices continued to decrease in areas where population was declining and supply exceeded demand (Hypoteekkiyhdistys 2018).

In addition to previously mentioned factors, low interest rates have also been playing the key role of raising apartment prices. The most popular reference rate of loans in Finland is 12-month Euribor which bottomed at all time low in 2016 and has been negative ever since (Orava & Turunen, 2016, Bank of Finland 1). Interest rate margins of banks have been decreasing for 5-years and the average rate was 0,76% in 2018. According to Hypoteekkiyhdistys (HYPO) which is a Finnish credit institution that specializes in housing, Finland is currently enjoying the cheapest mortgages in the world. Low interest rates have been one of the main reasons behind the increasing popularity of real estate investing as well. Therefore, the Finnish housing market is expected to be very sensitive for changes of interest rates as mortgages are tied to them. In other words, raising interest rates might force owners to sell their apartments because of higher interest expenses and mortgage payments that rental income might not be able to cover anymore. In addition, the popularity of real estate would decline due to higher lending rates (Oikarinen, 2007). As a result, the prices would come down as well. However, according to PTT, short-term rise of interest rates would not strain the housing markets because the interest rates would still remain low from both buyers' and debtors' point of view (PTT 2019).

Currently the winners of housing markets in Finland are small apartments at good locations with efficient square meters. Those are easily rented out regardless the busy construction of rental apartments that has brought a bit oversupply in some areas. Big apartments locating by bad traffic communications are the clear losers of the current housing market (Orava & Turunen, 2016)

1.3. Process of buying an apartment

Buying an apartment is the most important single decision in real estate investing and the potential returns are mostly determined at the buying moment. An optimal investment apartment usually differs quite a bit from investors' own homes. Buying an apartment that matches to investors own living preferences do not usually lead to highest possible returns (Vuokraturva). According to Orava and Turunen, four the most important aspects that should be considered before making a buying decision is the location, price, apartment size and apartment house company. The location determines what rental levels can be expected and how easily a tenant is found. The price is important variable affecting rental returns as if an investor pays too much in relation to rental levels, rental returns will remain lower. Paying too much also might make it difficult to resale the apartment at the acquisition price or at profit. The size of an apartment determines the number of potential tenants. Thereby, it is recommendable to buy a small apartment that would be suitable for majority of Finnish households. Buying an apartment from a good apartment house company is important. A good apartment house company does appropriate renovations and preventive maintenance. In case it is larger than an average and has own sources of income, it can be considered better than an average apartment house company (Orava & Turunen, 2016, 63-64). In addition, before signing the papers, a buyer should get acquainted with the house manager's certificate that is the most important document in housing transaction. The certificate provides information about the apartment house company's history, financial state, buildings and their condition and planned renovations or repairs (Isännöitsijäliitto).

When looking at the apartment selling ads online, most of the prices consist of two parts. The first is the selling price and the second is the amount of debt. These added together form the full price of an apartment. The debt refers to a charge of financial costs that must be paid for the apartment house company. The debt is usually taken by the apartment house company to build the building or pay for renovations. The taken debt is divided among the shareholders based on apartment sizes. A shareholder can pay off the whole addressed debt at any point (Väänänen, 2018). and if the debt has been paid off the only charge for the apartment house company is the maintenance fee. Maintenance fee is a payment made by shareholders to a housing company that cover the running costs and all the smaller maintenance operations (Orava & Turunen, 2016, 207). Maintenance fee will be discussed more detailed in the chapter 1.4.

The use of borrowed capital is common in real estate investing as it enables to leverage the profits. To illustrate, if an investor had 90 000€ of capital he could buy an apartment, put it on rent and earn rental incomes from it. However, the second option would be to buy three apartments by paying 30,000€ of own capital for each apartment and finance the rest with borrowed capital. In this case, the investor would earn rental income from three apartments. As mentioned in the section 1.1, the collateral values of apartments are usually 70-80% which means that an investor need to have own capital only 20-30% of the purchase price. Banks grant mortgages usually with 20-year payback terms as maximum if the loan is annuity loan. With annuity loan, instalments are equal during the whole payback period. However, if interest rates increase, the payback period will extend as well. Conversely, if interest rate decreases, the mortgage is paid off faster (Nordea). Mortgages are usually tied on 12-month Euribor which represents the reference interest rate that banks lend money to each other in Euro area (Bank of Finland 2). In addition to that banks add their own interest margin that is used for administration and compensate the risks banks take (OP). These two interest rates added together form the total interest rate of a mortgage. It is impossible to affect the Euribor rate but banks` margins may be affected by customer relationships, collateral values and solvencies (OP).

The taxation of real estate is simple. If an investor purchases an apartment, transfer tax of 2% must be paid from the full purchase price that includes the apartment house company`s debt as well. The payment must be made within 2-months from the purchase day (Vero 1). When the investor has put the apartment on rent, the tax of investment income of 30% is applied to rental incomes. The tax is calculated from net rental incomes that is obtained by subtracting the expenses regarding the rental operations for instance, maintenance fees, charge of financial costs and broker fees (Vero 2).

1.4 Risks and risk management

Every form of investing include risks and real estate investing is not an exception. Orava and Turunen introduced ten main risks to consider before making an investment that are: Price risk, interest rate risk, risk of empty months, tenant risk, rental level risk, maintenance fee risk, renovation risk, bank risk, political risk and risk of natural phenomenon. These risks are not same for everyone as the usually depend on different variables like knowledge, experience, levels of debt, location, size, quantity and the choice of a tenant. It is impossible to affect some of the risks

but there are still many risks that investors could be prepare for and therefore minimize the negative impacts. (Orava & Turunen, 2016, 245).

Price risk is always relevant for a buyer of an investment apartment. It means that the market price of the apartment could decline during the ownership. It is also known as buying power risk as it is possible that high inflation has risen the prices momentarily until they collapse or drop down on the normal level due to stabilizing economy (Leväinen, 2013, 211). Investors should remember that every apartment purchase is an individual transaction where the price can fluctuate under and over the market price (Turunen, J, 2014) If the investing strategy is “flipping” that aims for fast profits, price fluctuations might become expensive if the value of an apartment declines. On the other hand, when doing it correctly and market situation is supportive, risk can be turned to massive profits.

However, investors who look for stable cash flows, even 30% temporary decline in prices would not affect their lives. In a long-run the market value of an apartment should be more than the acquisition price which is very probable as the prices tend to go up over time (Orava & Turunen 2016, 199). As discussed previously, cash flows and rental levels are not usually dependent on price fluctuations. Although, investors who use leverage of over 70% should be aware that if prices decline remarkably, banks could become quite unpredictable. That is because if banks need more capital during a crisis, they would realize some of their wealth. (Orava & Turunen 2016, 199). There are basically two ways to minimize the price risk. The first way is to invest for cash flows instead of capital appreciations. The second way is to reduce the proportion of leverage.

Interest rate risk is the major risk in this field as real estate is usually highly leveraged which means that the equity investors` rate of return could be affected due to changing interest rates (Brueggeman & Fisher, 2010, 420) Also, the risk of having unmanageable levels of debt has become remarkable at the time of low interest rates that encourages to use high amounts of leverage (Orava & Turunen, 2016, 201). In the worst scenario, increasing interest rates not only impair the cash flows but they could turn to negative if rental incomes do not cover the maintenance charges and mortgage payments with interests. Obviously, interest rate risk would not be composed if leverage is not used (Leväinen, 2013, 209). At the time of low interest rate, investors should realize that current interest levels will most likely be different in future. Therefore, preparing for increasing interest levels is essential and predictive cash flow calculations should be done with sufficient rates (Turunen, 2014). Also, the critical rate of interest should be calculated

that tells the maximum rate of interest where rental incomes would be still able to cover the interest expenses. Any higher rate than the critical point would turn the cash flows negative.

Banks offer protection solutions for raising interest rates in forms of fixed rates and interest caps. Fixed rate will keep the total interest rate on a fixed level regardless the changes of market interest levels whereas the market cap ensures that investors' reference rate of interest won't exceed previously accepted rate. Another considerable way to protect from interest rate risk is to create a reserve fund. Saving over 30% of the value of an owned apartment or having other liquid assets would make it possible to reduce the amount of debt if necessary (Orava & Turunen, 2016, 202).

Risk of vacant months is one of the main risks that could reduce cash flows.

As the profitability of buy-to-rent investing consists of rental income that should be used to pay all the expenses related to the apartment, every empty vacant month reduces the profitability and turn the cash flows negative. If an investor has not prepared financially for vacant months, covering the mortgage expenses could become a risk for the rental operations. The more leverage is used, the more financial buffer should be reserved (Alho et al, 2018. 9-24).

There are several ways to keep the vacancy rate as low as possible. The main tool is purchasing apartments that are suitable for most of the people. As mentioned in chapter 1.2, 76% of Finnish households dwelling units consist of one or two persons and the highest demand focuses strongly on small apartments. Therefore, investing in small apartments at central location in growth centers considerably reduces the risk of empty months. It is also important to set the rental price on a market level as it is possible to get a tenant in overpriced apartment for a short period of time but having a long-term tenant paying too much is not very probable. A good condition and well-equipped apartment are more attractive than the opposite. Having a comfortable and cozy apartment is important to make a tenant stay longer. In case of renovation, it is advisable to prefer neutral style that appeals for masses (Orava & Turunen, 2016, 204).

Tenant risk is the risks of not receiving the required income. It also includes the risk of vacancies if a tenant is not able to pay the rent (Alstede, 2014, 27) However, in Finland, tenants are generally good people with high moral which means that payments are almost always done on time (Orava & Turunen, 2016, 205). Still, challenges might occur so there are a few ways to reduce the tenant risk.

Checking the credit ratings of a tenant before making a contract is one low effort action that prevent you from harm as troubles and problems tend to happen on same people. Talking one to one with a potential tenant is more effective way to recognize a possible bad tenant. Therefore, organizing a mass property display should be avoided as it is difficult to talk properly with everyone. Before making a contract, it is sensible to take at least one month but preferably two months rental guarantee from a tenant. Taking a rental guarantee also indicates that a tenant is not living on his last money (Orava & Turunen, 2016, 206)

Rent level risk is a risk of declining rent levels. As discussed in chapter 1.2, rent levels have been increasing almost every year whereas declining rents is extremely rare. Therefore, the risk of declining rent levels is very minor if an apartment is purchased from a good location of a growth center. Nevertheless, it is important to understand the risk of asking too high rental levels. Overpricing rents beyond the market price is easy if a landlord does not know the price level of the location (Orava & Turunen, 2016, 207).

Rent level risk can be minimized by finding out the average rent levels of the locations by following the online rental websites like Vuokraovi.com or Oikotie.fi. Rent levels can also be asked from real estate or rent brokers. The third way is using a rental broker, but it should be noticed that brokers take usually a fee of one month rent plus value added tax. Although, the fee can be deducted from taxes. Asking too low levels of rent is a sign of ignorance instead of being a risk (Orava & Turunen, 2016, 208).

Maintenance fee risk is a risk of significantly increasing maintenance fees that affect negatively to landlords` profits. Maintenance fee is the second largest expense after the possible mortgage payment and it is usually determined by the number of square meters of an apartment. Consequently, increasing maintenance fees affect more bigger apartments. Usually, more square meters do not reflect to the rent levels in the same proportion so investing in smaller apartments is one way to reduce the maintenance fee risk (Turunen, 2014, 22).

In 2017, the average maintenance fee of a housing cooperative was 4,81 euros per square meter where 22,7% went for heating, 22,2% for repairs and 7,9% for water (Statistics Finland 2017). Therefore, energy efficiency is one important aspect to pay attention to. Obviously, apartments that leak the heat out is less efficient than well engineered and built apartments that keep the heat inside. Another way to reduce the risk is purchasing an apartment from a housing cooperative that

generate rental incomes from its own apartments or business premises. However, it is important to understand that in worse locations, the demand of business premises might be non-existing. Third way to reduce the risk is purchasing an apartment from a larger housing cooperative as economy of scale applies in this context as well. On average, managing housing cooperative with larger amounts of apartments is cheaper than managing one with less apartments (Orava & Turunen, 2016, 210).

Renovation risk is the risk of facing unexpected renovation expenses. In most cases, major renovations consider the whole apartment house companies. The aim of renovations is to retain the value and all properties need some renovation sooner or later (Brueggeman & Fisher, 2005, 357). Buying an apartment from very small apartment house company considering the number of shares might be risky as the renovation expenses would be higher than in larger house companies as the expenses are among smaller group of shareholders (Kaarto 2015, 254)

Reducing the renovation risk could be done by preferring newer apartment house companies where mentioned renovations are far in the horizon. The second thing is getting acquainted with the maintenance and renovation report or long-term plan of an apartment house company that provides information and estimations about future renovation needs. (Orava & Turunen, 2016, 209)

Bank risk is a situation where financing of real estate investment gets more difficult and perhaps, prevent an investor from purchasing a new apartment. Thus, the risk affects the ability to grow investment volumes. However, the bank risk is small if an investor has already gathered some wealth through other apartments and cash flows. If an investor would like to have an instalment-free period, banks might suggest raising marginal interest rates but in other contexts they cannot be raised unless the bank end up in deep financial crisis. The bank risk could be prevented by not taking any debt if having already enough capital (Orava & turunen, 2016, 210).

Political risks are almost impossible to avoid. According to Geurts and Jaffe, political risks refers to probability of economic losses due to government actions that could have harmful effects on investment projects. It also includes for instance, possibility of unfair administration of laws, the lack of law enforcement and corruption (1996).

Risk of natural phenomenon is not very relevant in Finland especially if investing in apartments in block of flats. The main possible types of natural phenomenon that could cause harm are storms

and floods. The effects on block of flats are still generally very minor. Forecasting natural phenomenon is obviously extremely challenging (Orava & Turunen, 2016, 210).

Even though there are lots of risks relating to real estate investment, most of them could be avoided or minimized by using the discussed methods. Generally, if purchasing an apartment from a good location and apartment house company at sensible price with suitable levels of leverage, keeping the rents on market level and choosing the tenant carefully, the risks remain relatively low.

2. Data and methodology

In this chapter, the tools for measuring the profitability of real estate investment will be introduced and discussed. In addition, the subchapters describe more specifically what data were collected and why, what adjustments needed to be done and how.

2.1. Measuring returns in real estate investments

The aim of the empirical part of this thesis is to investigate the average profitability of real estate investment in one and two-room apartments in three cities in Finland between 2010-2018. In addition to that, the profitability of multiple apartments currently listed on sale is evaluated.

Profits of real estate investment are formed from two sources. The first source is rental income. It consists of regular cash flows from renting an apartment to a tenant. In order to calculate the potential rental returns, an investor should set a rental price and find out all the running costs related to the apartment. In addition to that, an investor should not forget to pay attention on wear and tear, possible empty months and future needs of renovations of the apartment (Vuokranantajat 1).

The second source of profit is capital appreciation. It means that the selling price of an apartment is higher than its acquisition price was. That generates capital gains. Generally, prices have been increasing for many years in areas that have demand and services. Development potential and nearby parks and water areas tend to support the price appreciation if the area is interesting. However, price appreciation is always theoretical until the apartment is sold and the price is concretized. The price of an apartment is determined by the current market situation and therefore it is risky to bet all on that. Still, Capital appreciation is important element of real estate investing and its profitability. Therefore, investors should be pursuing it (Vuokranantajat 2).

Rental return of a real estate investment can be calculated by using the following formula if no debt is addressed to the share of stock in a housing company or the loan is already or will be paid off immediately (Orava & Turunen, 2016,71):

$$\text{Rental return (\%)} = \frac{(\text{rent} - \text{maintenance fee}) * 12}{\text{free from debt price} + \text{renovation expenses} + \text{transfer tax}} * 100\% \quad (1)$$

The formula multiplies rental income before taxes by twelve months which is divided by the free-from-debt price added by renovation expenses and transfer tax of 2%. Free-from-debt price is the full non-leveraged price of an apartment and transfer tax of 2% is paid from that price. The aim of the empirical part is to compare the gross profitability and therefore the investment tax is excluded from the calculations. Renovation expenses are important variable in the formula that can affect distinctly on rental returns. Leaving renovation expenses out of calculations gives usually too optimistic results that might backfire later. For an upcoming pipe repair or other major renovations, it would be recommendable to prepare with 600€ per square meter totaling 15 000€ for 25m² apartment (Orava & Turunen, 2016). Also, major renovations could make an apartment unlivable for a few months that should not be forgotten. The presented formula assumes that every month is occupied, but in case of empty months, the multiplier 12 should be changed to correspond the number of occupied months. Every real estate investor should set a target yield of rental return and focus on those apartments that could possibly generate that. Generally, apartments yielding non-leveraged rental returns from 5% to 7% are considered as worthwhile investments and no less should be targeted.

Rental returns can be increased by using leverage that reduces the need of own capital. If leverage is used, rental returns can be calculated by the following formula:

$$\text{Leveraged rental return (\%)} = \frac{(\text{rent} - \text{maintenance fee} - \text{interest expense}) * 12}{\text{Own investment} + \text{renovation expenses} + \text{transfer tax}} * 100\% \quad (2)$$

This formula differs from the previous formula by including interest expenses and changing the free-of-debt price to the amount of own capital invested. The more leverage is used the higher the returns will be. The monthly interest expense can be calculated by multiplying the bank loan by the interest rate and dividing it by 12-months. To illustrate the effects of different levels of leverage on rental returns, a random recently fully renovated single-room apartment was chosen as an

example. The interest rate is assumed to be 2%. The apartment contains the following data: Size 28m², price 145 000€, rent 650€, maintenance fee 110€, transfer tax 2%.

Table 1. Effects of leverage, without and with renovation expenses.

Leverage (%)	0 %	25 %	50 %	75 %
Rental return (%)	4,38 %	5,10 %	6,59 %	10,85 %
With renovation exp. (%)	3,93 %	4,79 %	6,02 %	9,16 %

Source: Author`s calculations.

As Table 1 shows, the potential rental return on own investment would be 2.48 time higher if leverage of 75% is used instead of financing the apartment fully by own capital and if excluding the renovation expenses. The returns in the third column assumes that some major renovation is coming up in near future and the renovation expenses would be 600€/m² totaling 16800€. As the results illustrates, the effects of renovation expenses are clear as the 75% leveraged return would decrease by 1,69 percentage points.

After calculating the gross rental returns, it is relevant to calculate the net cash flows to see whether the cash flow would be positive or not. Net cash flow can be calculated by subtracting the maintenance fee and interest expense from the gross rental income in order to have the taxable income. The investment tax of 30% is applied to the taxable income that results the net cash flow.

Annual capital appreciation can be calculated by the following formula:

$$\text{Annual capital appreciation}(\%) = \sqrt[t]{\frac{\text{Selling price}_t - \text{Acquisition price}_0}{\text{Acquisition price}_0}} - 1 \quad (3)$$

As mentioned in the section 2.1, capital appreciation is concretized only when the apartment is sold. However, as the selling expenses are very apartment specific, they were left out as they are irrelevant when comparing the profitability of different cities and apartment sizes. If they were included in the calculations, they would have been subtracted from the selling price. In addition, the formula assumes that no leverage is used. Therefore, the formula slightly differs with leveraged investments as the denominator would be replaced by the amount of own capital invested. As the specific apartments selected for the empirical part of this thesis were on sale at the time of writing,

the possible capital appreciations must be estimated. The estimation is done by calculating the average of multiple rates that are discussed in the next paragraph.

Total return of a real estate investment is calculated by adding the rates of rental returns and capital appreciation together:

$$\text{Total return} = \text{Rental returns} + \text{Capital appreciation} \quad (4)$$

2.2. Data

In order to calculate and compare the average profitability, relevant data needed to be collected and the sample areas chosen. The chosen sample cities for the empirical part are Helsinki, Turku, Kuopio. These cities were chosen based on their population and geographical location to have more diversified results. Helsinki is the capital of Finland and the largest city with over 650 000 inhabitants. Turku is 6th largest with over 191 000 inhabitants and Kuopio 9th largest with population of 118 000. Also, each city is considered as a growth center where population is growing and demand positive. Helsinki represents the strongest growth center, Turku represent one of the main growth centers outside of Helsinki capital region while Kuopio represents a smaller growth center that has the major growth still ahead.

To gain more specific information about profitability in these cities, one area was chosen from each city. Statistics Finland has divided each city in three areas based on the location. For example, Helsinki 1 represents the city center area, Helsinki 2 represents the central area outside the city center and Helsinki 3 represents the areas outside Helsinki 2. For this thesis, Helsinki 2, Turku 1 and Kuopio 1 were chosen to represent the profitability of each city. Helsinki 2 was chosen because Helsinki 1 is extremely expensive area. As rental levels do not fully correlate with apartment prices, rental returns in the most expensive areas tend to be lower than elsewhere. Therefore, Helsinki 2 offers much more relevant and realistic picture of the profitability of real estate investments in Helsinki.

2.2.1 Rental return data

The rental data used for calculations of average annual rental returns in each area between 2010-2018 were gathered from Statistics Finland databases. Annual data were gathered about the average rents, maintenance fees and prices per square meter of each sample area. However, the data about average rents only included data from 2011-2018 and therefore the average rents in 2010 were estimated based on the yearly appreciation of rents in each area between 2011 and 2018. Also, any data about maintenance fees in 2018 were not available either so the estimations were done by the same logic than the rent estimation was done. The collected average data is found as appendix 1 from the last page of this thesis. The estimated values are included in the table and marked in bold letters. After obtaining all the relevant data, the profitability calculations were done based on the previously introduced formulas by using 31m² and 42m² apartments as sample that represent the single and two-room apartments.

In order to calculate the estimated rental returns for specific apartments, sample apartments were needed. The sample apartments were chosen among apartments currently listed on sale on Etuovi.com. Data from three single-room apartments and three two-room apartments were gathered from each area. The condition of the apartments was either good or satisfactory. The sizes of the selected single and two-room apartments are 31m² and 42m² to achieve more comparable results. The assumption was that no major renovations were in the horizon and all the apartments could be put on rent as such. Therefore, renovation expenses were left out as the aim of the calculations was estimating the rental returns only for the beginning of the investment period assuming the renovation expenses occurs far further in future. However, the calculations do take the possible minor repair and other maintenance costs into account. Those costs were estimated to be 7% of the annual gross rental income.

The estimated future rents for the specific apartments were calculated based on Statistics Finland databases but multiplied by the percentage of estimated growth according to the forecast of 2019 made by PTT. PTT forecasted that the rental levels will increase 2,3% in Helsinki, 2,2% in Turku and 1,8% in Kuopio. In addition, Statistics Finland has divided the rental levels in three quarterlies; low, median and high. Instead of using the same average data that was used for the average calculations between 2010-2018 the median and high quartiles were used as the condition and sub location of the specific apartments were taken in to account for the estimations. However, the location of every sample apartment was excellent, so it did not affect the results. Thereby,

apartments in good condition were priced according to higher quartiles and apartments in satisfactory condition were priced according to median prices. Both apartments in Kuopio 1 and the single-room apartment in Turku 1 were priced according the higher quartiles and the rest were priced according to the median prices.

The leveraged rental returns calculations were done by using annuity based 20-year loan with 2% interest rate. The annuity loan with 20-year payback period is the most popular type of mortgage in Finland. According to the Euribor statistics of Bank of Finland, the 12-month Euribor rate was -0,113 at the time of writing while the estimated average marginal interests of banks are estimated to be 0,85% in 2019 based on the PTT's forecast. However, the 2% interest rate were used to have a bit more leeway for possible increase in interest rates.

2.2.2. Capital appreciation data

The data for the calculations of average capital appreciation between 2010-2018 were also gathered from Statistics Finland. Data about price per square meters were used to calculate the yearly differences. Again, the average calculations were made for 31m² and 42m² apartments based on the formula presented in the section 2.1.

For the sample apartments currently listed on sale, the price data were gathered from sales ads on Etuovi.com. The estimated price appreciations are calculated for the next 10 years. The rates are obtained by calculating the average of three different rates based on the average data of Statistics Finland. The first rate is the average annual appreciation of single and two-room apartments in old block of flats in each of the sample areas between 2010 and 2018. The second rate is the average appreciation between 2016 and 2018 calculated with the same constraints while the third rate is the forecasted appreciation of all apartments in old block of flats in the whole city that has been forecasted by PTT. Using only the average annual rates would have not given enough weight on recent trends and using only PTT's forecasts would have provided too conservative results while using only the rates of 2018 could have resulted too optimistic yields. Using the average rate of these rates provide reasonably conservative results that still take the recent trends into account that shows the direction of future appreciations. The calculations include the 2% transfer tax but do not take any capital gain taxes, broker fees or any other possible expenses into account as they realized only when the apartment is sold.

3. RESULTS

This chapter shows the results of the calculations. The chapter is divided to three chapters: rental returns, capital appreciations and total returns. Every sub-chapter shows first the average returns based on historical data between 2010-2018. After that the estimated returns are calculated for specific apartments that was listed on sale at the time of writing. The calculations for the specific apartments are done for the beginning of the investment period. All the tables include results from both, single and two-room apartments that abbreviated as “1” and “2” on the top of the tables.

3.1 Rental returns

The average results in table 2 do not take any renovation or other minor expenditures into account. The results have been calculated by using the rental returns and leveraged rental returns formulas that were introduced previously. As mentioned, the leveraged returns are calculated with 20-year annuity loan with 2% interest rate. The results are gross rental returns, but monthly net cash flows have been calculated for the specific apartments to illustrate profitability.

Table 2. Average rental returns on equity of single and two-room apartments, 2010-2018,

Year	Helsinki 2		Turku 1		Kuopio 1	
	1	2	1	2	1	2
2010	4,09 %	3,17 %	4,85 %	4,00 %	5,57 %	4,28 %
2011	3,95 %	3,05 %	4,83 %	4,00 %	5,56 %	4,22 %
2012	3,87 %	3,11 %	4,89 %	4,03 %	5,55 %	4,85 %
2013	3,72 %	3,09 %	4,61 %	3,90 %	5,56 %	4,45 %
2014	3,84 %	3,08 %	4,68 %	3,81 %	5,22 %	4,31 %
2015	3,90 %	3,12 %	4,51 %	3,93 %	5,28 %	4,40 %
2016	3,89 %	3,19 %	4,36 %	3,71 %	5,39 %	4,81 %
2017	3,83 %	3,13 %	4,12 %	3,86 %	5,52 %	4,74 %
2018	3,76 %	2,91 %	4,08 %	3,59 %	5,26 %	4,76 %
Total rental return	34,85 %	27,84 %	40,93 %	34,82 %	48,90 %	40,83 %
Annual rental return	3,87 %	3,09 %	4,55 %	3,87 %	5,43 %	4,54 %
Leveraged total return (75%)	85,39 %	57,37 %	109,72 %	85,26 %	141,60 %	109,31 %
Annual rental return (75%)	9,49 %	6,37 %	12,19 %	9,47 %	15,73 %	12,15 %

Source: Statistics Finland. Author`s calculations.

As table 2 shows, single-room apartments have clearly been more profitable than two-room apartments in each area on average. It is not surprising as rental levels do not increase in the same proportion with square meters whereas expenses do. The higher expenses gnaw the profits and therefore single-room apartments are usually more profitable than two-room apartments. However, two-room apartments in Kuopio 1 have still been more profitable than single-room apartments in Helsinki 2 and Turku 1. That could be explained by relatively high average rental levels and clearly the lowest price per square meter among the sample areas. When comparing the profitability on a city level, Kuopio 1 has been the most profitable area with non-leveraged average yields of 5,43% from single-room and 4,54% from two-room apartments. Helsinki 2 has been clearly the least profitable with both apartment sizes at non-leveraged rates of 3,87% and 3,09%. The results were quite expected as the apartment prices have been increasing faster in bigger cities, especially in Helsinki that is the main reason for lower rental returns. In Kuopio 1, the price increase has been much slower compared to the rental levels that is reflected to the higher rental returns. To illustrate, the average price per square meter of single room apartments in 2018 was 6338€/m² in Helsinki and 3205€/m² in Kuopio 1 while the average rents were 24,83€/m² in Helsinki 2 and 18,24€/m² in Kuopio 1. This means that the apartment prices in Helsinki 2 were 97% higher than in Kuopio 1 whereas the rental level were only 40% higher.

When looking at the 75% leveraged returns, the effects are significant. The returns at least doubled with both apartment sizes in all areas. The most immense effect can be seen in the returns of single-

room apartments in Kuopio 1 where the leveraged average yearly rental return is 2.90 times higher than the non-leveraged return.

Table 2 shows estimated rental returns on equity from one single and one two-room apartment in each area. As mentioned previously in this thesis, none of the sample apartments had any major renovations coming up in near future and therefore renovation expenses were left out as they are expected to occur later in future. Yet, the calculations do take costs from potential other maintenance and minor repairs into account that are estimated to be 7% of the annual gross rental return.

Table 3. Estimated yearly rental returns on investment, single and two-room apartments.

	Helsinki 2		Turku 1		Kuopio 1	
	1	2	1	2	1	2
Purchase price, EUR	212 000	258 000	149 980	173 000	109 900	130 000
Purchase price m2, EUR	6839	6143	4838	4119	3545	3095
average rent m2, EUR	28,02	21,3	20,05	14,6	21	16,5
Total m2	31	42	31	42	31	42
Gross rental return, EUR	10423	10735	7459	7358	7812	8316
Maintenance fee m2, EUR	5,06	4,09	3,6	2,81	4,3	3,7
Transfer tax 2%, EUR	4240	5160	3000	3460	2198	2600
Other annual maintenance, EUR	730	751	522	515	547	582
Non-leveraged rental return	3,94 %	3,29 %	3,99 %	3,36 %	5,52 %	4,84 %
Leverage	75 %	75 %	75 %	75 %	75 %	75 %
Bank loan, EUR	159 000	193 500	112 485	129 750	82 425	97 500
Own equity, EUR	53 000	64 500	37 495	43 250	27 475	32 500
Interest rate	2 %	2 %	2 %	2 %	2 %	2 %
Leveraged rental return	9,25 %	6,82 %	9,43 %	7,09 %	15,10 %	12,61 %
Leveraged net cash flow, EUR	-246,0	-402,3	-171,0	-262,4	-24,5	-81,3

Source: Etuovi.com, Statistics of Finland, PTT. Author`s calculations.

When looking at the estimated rental returns in table 2, the results are in line with the average calculations in table 1. The apartments in Kuopio 1 would be the most profitable as the estimated non-leveraged yields would be 5,50% with single and 4,84% with two-room apartments. The apartment in Helsinki 2 would be the least profitable yielding 3,94% and 3,29% without using any leverage. However, the yields in Turku 1 are just fractionally higher than in Helsinki but clearly lower than in Kuopio 1.

Considering first the single-room apartments, the apartment in Kuopio is the only one that could be considered as worthwhile investment as it would yield over 5% that is considered the minimum sensible required return. Thereby, the single-room apartments in Helsinki 2 and Turku 1 would not be very sensible investments in terms of rental returns. Again, the reason for relatively lower returns in Helsinki 2 and Turku 1 compared to Kuopio 1 is the higher price per square meter in respect to the rent per square meter. The price per square meter in Helsinki 2 is 2.21 times higher than in Kuopio while the rent per square meter is just 1.34 times higher. In addition, the maintenance fee is lower in Kuopio that supports the higher returns even more. Based on the calculations, the estimated rental returns of two-room apartments are again lower than the returns of the single-room apartments. Interestingly, the two-room apartment in Kuopio 1 is clearly more profitable than the single-room apartments in Helsinki 2 and Turku 1 yielding 4,84%. Despite of that, it would not be recommendable investment as the yield remains below 5%. Comparing the results to the average rental returns in the table 2, the apartments in Helsinki 2 and Kuopio 1 would yield more than the average between 2010 and 2018.

The last column in table 3 shows the net cash flows from the leveraged investments with 30% tax. The monthly taxable income is obtained by subtracting the monthly interest expense from the monthly gross rental returns. After subtracting the mortgage payment from the taxed income, the net cash flow is obtained. Interestingly, none of the sample apartments would generate enough income that the monthly expenses would be covered. Still, it does not mean that the investor would make loss, but it means that the negative amount should be paid from own equity. If an investor does not have any financial buffer, the negative cashflows could become a problem.

3.2. Capital appreciation

The annual capital appreciation was calculated by calculating the annual appreciation from the total appreciation. The results do not include any broker fees or other selling costs. The results are gross yields.

Table 3. Average total and yearly capital appreciations 2010-2018, one and two-room apartments.

	Helsinki 2		Turku 1		Kuopio 1	
	1	2	1	2	1	2
Acquisition price (2010)	137 768 €	173 905 €	83 540 €	103 027 €	78 196 €	95 746 €
Selling price (2018)	200 408 €	247 809 €	120 156 €	137 282 €	101 342 €	112 720 €
Total capital appreciaiton	45,47 %	42,50 %	43,83 %	33,25 %	29,60 %	17,73 %
Annual appreciation	4,25 %	4,01 %	4,12 %	3,24 %	2,92 %	1,83 %
With leverage (75%)	181,87 %	169,99 %	175,32 %	132,99 %	118,40 %	70,91 %
Annual appreciation (75%)	12,20 %	11,67 %	11,91 %	9,85 %	9,07 %	6,14 %

Source: Statistics Finland, PTT. Author`s calculations.

Table 4 shows the average yearly capital appreciations of single and two-room apartments in each sample area between 2010 and 2018. The calculations were done assuming that the single-room apartments are 31m² and two-room apartments are 42m². Unlike with the rental returns, the order is here the opposite. The appreciation of both single and-two room apartments has been the strongest in Helsinki 2 with annual non-leveraged appreciation of 4,25% and 4,01%. Turku placed the second with rates of 4,12% ad 3,24% and Kuopio the last with returns of 2,92% and 1,83%. This order was quite expected as the highest demand and population growth have been focused on the major cities of Finland like on Helsinki, Tampere and Turku that can be seen in the prices as well. As mentioned before in this thesis, Kuopio 1 represents a city that has lots of potential and that has the major growth still ahead. That explains the lower capital appreciation as well as the city has started to grow more recently.

The table 3 shows only the average annual capital returns between 2010 and 2018 so it does not tell the current or latest trends. For instance, if considering the price appreciations only between 2017 and 2018, the appreciations of single-room apartments was the highest in Kuopio 1 at the average rate of 7,05% which is significantly higher than the rate in the table 3. Helsinki 2 took the second place with 4,07% while Turku 1 took the third place with 3,29%. Apparently, the price increase in Helsinki 2 and Turku 1 in 2018 was less than the average yearly appreciation in the table 3. If considering only the appreciations of two-room apartments between 2017-2018, they appreciated over 7% in Helsinki and Turku while they actually depreciated by 1,57% in Kuopio 1. That finding indicates that the demand of two-room apartments in Helsinki and Turku have increased faster in relation to the existing supply while there has been slight oversupply in Kuopio 1. In addition, the high demand has fueled the new construction of single-room apartments especially in the main growth centers that has increased the supply. Still, regardless of the increased supply, the demand of single-room apartments will remain high due to urbanization, but the price increase is expected to be a bit more composed.

Table 4. Estimated yearly capital appreciations for one and two-room sample apartments.

	Helsinki 2		Turku 1		Kuopio 1	
	1	2	1	2	1	2
Yearly appreciation (2010-2018)	4,25 %	4,01 %	4,12 %	3,24 %	2,92 %	1,83 %
Appreciation (2017-2018)	4,07 %	7,11 %	3,29 %	7,30 %	7,05 %	-1,57 %
PTT`s forecast (2019)	3,50 %	3,50 %	1,50 %	1,50 %	0,02 %	0,02 %
Estimated annual appreciation	3,94 %	4,87 %	2,97 %	4,01 %	3,33 %	0,09 %
With leverage (75%)	15,77 %	19,50 %	11,88 %	16,06 %	13,32 %	0,37 %

Source: Statistics Finland, PTT. Author`s calculations.

Table 4 shows the estimated yearly capital appreciations for the sample apartments. The calculations are based on historical data of Statistics Finland and forecasts made by PTT. The estimated rates of appreciation are the average of the three different rates shown in the table 4. Based on the calculations, the estimated future yearly appreciation of the specific single-room apartments would be the highest in Helsinki 1, the second highest in Kuopio 1 and the lowest in Turku 1. The order changed with specific apartments as the average appreciation has been the lowest in Kuopio between 2010 and 2018. The main reason for the change is the fact that between 2017 and 2018 single-room apartments appreciated by 7,05% in Kuopio 1 whereas the appreciation was only 3,29% in Turku 1 on average.

Interestingly, the estimated appreciations of two-room apartments in Helsinki 2 and Turku 2 are higher than the appreciation of single-room apartments in the same areas. Yet, it is not surprising as prices of single-room apartments have gone up significantly in larger cities due to urbanization and growing popularity of real-estate investing. High prices of single-room apartments have made two-room apartments attractive options for home buyers. The appreciation potential is also higher with two-room apartments as the price development has been more moderate in recent years. When looking at the rates between 2017 and 2018, the appreciations were over 7% in Helsinki 2 and Turku 1 whereas the prices depreciated by 1,57% in Kuopio 1. The housing market in Kuopio is at quite interesting point as there are currently multiple new residential districts being built and the population growth has been more moderate so far than in Helsinki and Turku in relation. It seems that there has been momentarily a slight oversupply with two-room apartments as the prices depreciated by 1,57% in 2017. However, more people and investors are expected to flow in Kuopio in the coming years, so the future price appreciations could be relatively higher than the estimated appreciations as they are mainly based on historical data.

4.3 Total return

The total returns are calculated by adding the rate of rental returns and capital appreciation together. The results are gross total returns.

Table 5. Average total returns of single and two-room apartments, 2010-2018.

	Helsinki 2		Turku 1		Kuopio 1	
	1	2	1	2	1	2
Annual rental return	3,87 %	3,09 %	4,55 %	3,87 %	5,43 %	4,54 %
Annual capital appreciation	4,25 %	4,01 %	4,12 %	3,24 %	2,92 %	1,83 %
Annual total return	8,12 %	7,11 %	8,67 %	7,11 %	8,36 %	6,37 %
Leveraged rental return (75%)	9,49 %	6,37 %	12,19 %	9,47 %	15,73 %	12,15 %
Leveraged appreciation (75%)	12,20 %	11,67 %	11,91 %	9,85 %	9,07 %	6,14 %
Annual total return (75%)	21,69 %	18,04 %	24,10 %	19,33 %	24,80 %	18,28 %

Source: Author`s calculations.

Table 5 shows that despite the relatively high differences in rental returns and capital appreciations. Single-room apartments have been averagely more profitable than two-room apartments in each area as they have yielded 1.23 times more than two-room apartments. The total returns have been surprisingly even especially among single-room apartments as the margin is only 0,55%. Two-room apartments have been equally profitable in Helsinki and Turku while being clearly less profitable in Kuopio 1 at 6.35%. Turku 1 has offered the highest average yearly total returns from single-room apartments among the sample areas between 2010 and 2018 as they have generated average yearly non-leveraged total returns of 8,67% while the leveraged yield is 2.78 times higher. Kuopio 1 placed to second among the single-room apartments despite the low historical capital appreciations. Helsinki 1 has been the least profitable area. Regardless the high annual capital appreciation rate, the low rental returns is the reason for the lower total returns.

The order of the leveraged returns differs slightly with the non-leveraged returns as Kuopio would be the most profitable are among single-room apartments. The reason behind that is the high rate of leveraged rental returns that affects the total returns quite a bit.

Table 6. Estimated yearly total returns for the sample apartments.

	Helsinki 2		Turku 1		Kuopio 1	
	1	2	1	2	1	2
Estimated annual rental return	3,94 %	3,29 %	3,99 %	3,36 %	5,52 %	4,84 %
Estimated annual appreciation	3,94 %	4,87 %	2,97 %	4,01 %	3,33 %	0,09 %
Estimated total return	7,88 %	8,16 %	6,96 %	7,37 %	8,85 %	4,94 %
With leverage (75%)	25,01 %	26,32 %	21,31 %	23,14 %	28,42 %	12,99 %

Source: Author`s calculations

Table 6 shows that the estimated total returns of the specific single-room apartments would be the highest in Kuopio 1 yielding estimated non-leveraged returns of 8,97% and leveraged returns of 28,91%. However, the estimated appreciation might be a bit conservative in real life as the estimation is mostly based on historical data. The second highest total returns of single-room apartments would be gained from Helsinki while Turku would be the least profitable. However, the two-room apartments in Helsinki 2 and Turku 1 would be actually more profitable than the single-room apartments according to the calculations. The reason for that is the higher estimated capital appreciations as shown in the table 4. The least profitable apartment would be the two-room apartment in Kuopio yielding only 4,98% without and 13,17% with leverage. To put that into perspective, the two-room apartment in Helsinki 2 would yield 1.69 or 2.06 times more depending on the leverage.

However, it should be remembered that capital appreciations are realized only when the apartment is sold and therefore the calculated total returns are only directing estimates. For that reason, it is recommendable to focus more on the cash flows as apartment prices tend to fluctuate quite a bit depending on the market situations. In addition, these calculations did not take any empty months, broker fees or any other additional expenses into account that might have caused slightly different results.

CONCLUSION

The motivation for the topic of this thesis originated from the fact that regardless the increased popularity of real estate investing, the general information about the market development, trends and the important aspects to consider before making an investment was very fragmented and surprisingly scarce. The researches on profitability of different cities and areas were limited and, in the most cases, already dated. The general opinion was that single-room apartment is always a better investment. However, the recent development of Finnish real estate market has raised the prices of single-room apartments significantly during the past years and thus it was not evident whether single-room apartments are actually more profitable than two-room apartments regardless the lower expenses and risks related to them.

The aim of the theoretical part of this thesis was to investigate the Finnish real estate market, how it has been developed and what is the structure of it. The aim was also to find out what are the most important aspects to consider before making a real estate investment including discussion about real estate as an investment, process of buying an apartment and what are the major risks to consider and how to manage them. The standpoint of the thesis was buy-to-rent investing from private investors` point of view. The aim of the empirical part was to find out what have been the most profitable cities to invest in real estate on average among the sample cities between 2010 and 2018 that included the main areas from Helsinki, Turku and Kuopio. The profitability was measured by total returns that consist of rental returns and capital appreciation. The aim also included how the profitability has differed between single and two-room apartments in each sample area. In addition to the average calculations, the aim was to determine the profitability of multiple specific apartments currently listed on sale in the sample areas.

The main findings of the theoretical part were interesting. Considering first the Finnish real estate market, 76% of Finnish households consist one or two persons. The popularity of living in rent has been increasing since 1990s and 33% of Finnish households lived in rent in 2018. The most

popular type of residential property was block of flats as 45% of all permanently occupied dwellings in Finland were apartment units in block of flats. The number of rental apartments in Finland was 854,000 where the 56% were non-subsidized apartments owned either by professional or private investors. The apartment prices have fluctuated quite a bit between 1970 and 1995 due to the oil crises, financial deregulation and the deep recession in Finland. Since 1990s the appreciation has been quite significant especially in the major cities of Finland. Interestingly, the rental price development has been very stable, and they are not directly dependent on price fluctuations. Generally rental levels have been increasing faster than apartment prices due to increased popularity and demand of rental apartments. The high demand has also been fueling the new construction that was previously this strong in 1991. The interest rates have been low and Euribor 12, which is the commonly used reference rate on mortgages bottomed in 2016 and has been negative ever since. The most important aspects to consider before purchasing an apartment is price, size, location and the apartment house company. The risks related the real estate investing are either systematic or unsystematic where the major risks are related to the price, interest rates and possible empty months.

The results of the empirical part indicate that on average, apartments in Kuopio 1 have been the most profitable between 2010 and 2018 in terms of rental returns while Helsinki 1 has been the least profitable. Rental returns of single-room apartments have generally been clearly higher than the returns of two-room apartments. When considering the price appreciation between 2010 and 2018, the order is the opposite of the rental returns as the appreciation has been the strongest in Helsinki 2 and lowest in Kuopio 1. Single-room apartments have been appreciating more on average than two-room apartments. Adding the rates of rental returns and capital appreciation together, the highest average yearly total return of single-room apartments between 2010 and 2018 can be found from Turku at 8,67% and the lowest from Helsinki at 8,16%. However, two-room apartments in Helsinki and Turku has been equally profitable at 7,11% while Kuopio have yielded only by 6.37% on average.

When considering the specific apartments and the estimated profitability, the single and two-room apartments in Kuopio 1 would generate the highest rental returns while the apartments in Helsinki 2 would provide the highest estimated yearly capital appreciation. However, despite the low estimated capital appreciation in Kuopio 1, it would be the most profitable among single-room apartments in terms of total returns at yearly rate of 8,97%. For two-room apartments, the

apartment in Helsinki 2 would be the most profitable at 8,40%. For all calculations the effects of leverage are remarkable as the mentioned rates at least doubled while some of them even tripled.

The results of this thesis had multiple restraints. As the average and are specific apartment data were only available considering years between 2010 and 2018, the sample period remained quite short. The average calculations took transfer taxes into account but did not include any renovation or other expenses. However, as the aim was to compare the average profitability, those expenses would not have been affected the order even though the actual returns might be a bit optimistic. Still, if data from longer period were available, the calculations could be done again to have better understanding about the profitability and its development in each area. The calculations of the specific apartments were made only for one single and one two-room apartments in each area and they do not represent the overall profitability of each area. To have better view the current and future profitability the sample size should be larger. A serious investor could look the results as guideline, but each apartment should be considered more profoundly and adjust the calculations in so that all the potential expenses are taken into account, not forgetting to get acquainted with the house man`s certificate.

Comparing the profitability of residential real estate to profitability of commercial real estate would be interesting topic for further research. Also, comparing the profitability of direct residential and commercial real estate investments to indirect real estate investments such as real estate funds would be useful. The object could be what is the most profitable way to invest in real estate in Finland as a private investor.

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APPENDICES

Appendix 1. Average prices, rents and maintenance fees in sample areas 2010-2018. (€/m²).

€	Year	Helsinki 2		Turku		Kuopio	
		1	2	1	2	1	2
Price	2010	4357	3965	2642	2349	2473	2183
Price	2011	4615	4172	2736	2428	2552	2307
Price	2012	4880	4386	2770	2458	2627	2291
Price	2013	5230	4637	2999	2567	2706	2353
Price	2014	5355	4733	3018	2607	2920	2529
Price	2015	5517	4871	3204	2667	2988	2507
Price	2016	5769	5014	3550	2841	3000	2503
Price	2017	6090	5275	3679	2917	2994	2611
Price	2018	6338	5650	3800	3130	3205	2570
Rent	2010	18,92	14,44	14,02	11,11	14,92	11,16
Rent	2011	19,52	14,86	14,35	11,37	15,26	11,48
Rent	2012	20,09	15,64	14,76	11,65	15,75	12,8
Rent	2013	20,98	16,6	15,25	12,01	16,31	12,42
Rent	2014	22,24	17,15	15,71	12,16	16,66	12,98
Rent	2015	23,16	17,8	16,05	12,66	17,17	13,15
Rent	2016	23,76	18,27	17,11	12,89	17,55	14,04
Rent	2017	24,27	18,48	16,81	13,51	17,87	14,34
Rent	2018	24,83	18,55	17,25	13,62	18,24	14,31
Maintenance fee	2010	3,76	3,76	3,12	3,12	3,21	3,21
Maintenance fee	2011	4,04	4,04	3,12	3,12	3,21	3,21
Maintenance fee	2012	4,04	4,04	3,24	3,24	3,36	3,36
Maintenance fee	2013	4,43	4,43	3,51	3,51	3,51	3,51
Maintenance fee	2014	4,76	4,76	3,71	3,71	3,71	3,71
Maintenance fee	2015	4,87	4,87	3,76	3,76	3,77	3,77
Maintenance fee	2016	4,69	4,69	3,94	3,94	3,81	3,81
Maintenance fee	2017	4,46	4,46	3,93	3,93	3,81	3,81
Maintenance fee	2018	4,59	4,59	4,08	4,08	3,92	3,92

Source: Statistics Finland, PTT.

Notes: The prices/m² in 2010 and the maintenance fees/m² in 2018 are estimated by author.