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The Impact of the Turku Tramway on Housing Price Appreciation

– Investor Perspective and Business Opportunities



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The Impact of the Turku Tramway on Housing Price Appreciation

- Investor Perspective and Business Opportunities

The aim of the study was to investigate the potential positive increase in housing prices brought by the Turku tramway. Turku has been considering the construction of a tramway for a few years and has made preliminary calculations. At the time of this study, a more detailed cost estimate is being prepared and will be completed by the end of 2025. The research method used was an integrative literature review, which was critically evaluated.

The theoretical section of the study, placed at the beginning, explores the components of housing prices, the housing market, urban development, and the business opportunities brought by housing. It can be concluded that the components of housing prices consist of several factors and are significantly influenced by external factors.

In the empirical part of the study, Turku's situation was compared to Tampere's. Similarities and differences were sought. The research results indicate that in Tampere, the tramway inevitably caused a positive increase in value. When the situation was critically compared to Turku and the global context, it was concluded that it is likely to see a positive increase in value in Turku as well, although more moderate than in Tampere. However, the conclusions were made based on current information, and if the cost estimate to be completed by the end of the year shows clear cost inflation, the conclusion could be at least controversial or even negative.

Keywords:

Housing market, real estate investing, property price components, tramway, urban design

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Turun Raitiotien vaikutus asuntojen hinnankehitykseen

- Sijoittajien ja liiketoiminnan näkökulmasta

Työn tavoitteena oli tutkia Turun raitiotien tuomaa mahdollista positiivista arvonnousua asuntojen hintoihin. Turku on muutaman vuoden pohtinut raitiotien rakentamista ja tehnyt siitä alustavat laskelmat. Tämän tutkimuksen teko hetkellä tarkempi kustannusarvio on tekeillä ja valmistuu loppuvuodesta 2025.

Tutkimusmenetelmänä toimi integroiva kirjallisuuskatsaus, jota arvioitiin kriittisesti.

Tutkimuksessa on teoriaosio rakennettu työn alkuun, jossa selvitetään asuntojen hintakomponentteja, asuntomarkkinaa, kaupunkikehitystä ja asuntojen tuomaa liiketoimintamahdollisuutta. Voidaan todeta, että asuntojen hintakomponentit koostuvat useasta tekijästä ja niihin vaikuttaa paljon ulkoisia tekijöitä.

Työn empirisessä osuudessa vertailtiin Turun tilannetta Tampereeseen. Yhtäläisyyksiä ja eroavaisuuksia pyrittiin löytämään. Tutkimustulos osoittaa, että Tampereella raitiotie aiheutti väistämättä positiivista arvonnousua. Kun tilannetta peilattiin kriittisesti Turun ja maailman tilanteeseen todettiin, että Turussakin on todennäköistä nähdä positiivista arvonnousua, joskin maltillisempaa kuin Tampereella. Toki johtopäätökset tehtiin nykyisen tiedon valossa ja mikäli loppuvuodesta valmistuva kustannusarvio osoittaa selvää kustannusinflaatiota johtopäätös voi olla vähintäänkin kiistelty tai jopa negatiivinen.

Asiasanat:

asuntomarkkinat, asuntosijoittaminen, asuntojen hintakomponentit, raitiotie,
yhdyskuntasuunnittelu

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List of abbreviations (or) symbols

CBD	Central Business District
DID	Difference-in-difference
HPI	House Price Index
OLS	Ordinary Least Squares
WRS	Weighted Repeat Sales

1. Introduction

In this study are analysed the possible impacts of Turku Tramway project to the property values of Turku. Turku is planning a tramway project, and the decision if project starts is scheduled to the end of year 2025. (Raitiotie, 2025) That for this study is currently topical and could guide readers to understand better if tramway projects are typically providing value for business owners and property owners. This study is very important in terms of property owners because in Finland over 70% of households live in own apartments or houses and only less than 30% live renting (Roininen, 2018). The share have been a trend for a long time in Finland, because in the beginning of 1990 the share was 70-30%, during the depression it fall a bit 1995 67-33% and 2000 63-37% but after that it rises and have remained quite stable with the current share +65% (Nurmi, Puro, & Lujanen, 2017). Countries that are economically strong have become urbanized. Urbanization and economic growth move side by side. (Loikkanen & Laakso, 2016)

Tramways have many impact areas in cities of nowadays according to Case studies made in Europe and North America. Study shows that number of shoppers increased along the tramway and property and rent values rose. Tramways itself are not the only source of economic growth for the cities, there should be strong economic climate in the case city. (Crampton, 2003) According Larkela, who made a specific case study made about the Turku Tramway project, it is controversial fact that tramway produce necessarily any positive price appreciation for the properties. The price change could be neighbourhood specific, and could increase the price, decrease or even stay neutral. (Larkela, 2020)

The target of this study is to analyse if the possible upcoming Turku Tramway project could have some positive impact in the property prices. The property value increase is a key metric analysing the Turku Tramway project because it will advocate the decision making of property owners and business owners of the area. The overall research method for this study can be determined as an integrative literature review. An integrative literature review analyses previous studies and literature and ads its own new points of view with a critical approach. The study is conducted making an overall theory literature review on how the prices of properties consist of what is the principles of real estate investing and what are the key parameters that need to be considered while designing urban areas and transportation in chapter 2. In the chapter 3 is presented more deeply the research methods of this study. In chapter 4 is presented the literature review of another Finnish city Tampere. The literature review will evaluate Tampere's tramway project and identify the key metrics. In the chapter 5

is presented the framework which will estimate the impacts of the Turku Tramway project. The main comparison between Tampere and Turku tram-projects will be evaluated there. In the chapter 6 is discussed the tramway project. The last chapter 7 includes the conclusions and future research fields of the study.

The research questions are following:

1. According to previous research how much (if any) Tampere tramway project generated property price increase in its own tram project?
2. What are the key similarities and differences between fulfilled Tampere project and upcoming Turku project?
3. How much (if any) potential value Turku Tramway project can produce in terms of property price rise?

The limitation of the study is that the study needs to be ready before the decision making of the Turku Tramway project is over latest on the end of 2025 (actually the study lasted from march 2025 to May 2025). One limitation in this research is that all this research material is dig from public sources, so the insight information is not provided in this study. The research can't define if numerically if the tramway produces some kind of value addition to the property and rent prices because the study will be ready before the actual price data could be acquired. A potential suggestion for future research could be making a Case analysis few years after the tramway project is ready (if the project gets implemented) analysing history data and comparing it to those days data and measuring if the impact the estimation of this research is aligned with the actual outcome.

2 Business principles

In this chapter real estate principles are introduced using literature review. The chapter is divided into four subchapters. There are few motivational quotes before the actual literature review starts:

"Don't wait to buy real estate. Buy real estate and wait." – Will Rogers

"Real estate cannot be lost or stolen, nor can it be carried away. Purchased with common sense, paid for in full, and managed with reasonable care, it is about the safest investment in the world." – Franklin D. Roosevelt

"Buying real estate is not only the best way, the quickest way, the safest way, but the only way to become wealthy." – Marshall Field

The common factor in previous quotes is that real estate is very perceptible asset which won't make anyone wealthy fast. Instead, it requires time and effort, but it is a good asset in small investors portfolio.

2.1 Principles of real estate price structure

Property prices are built from many varied factors. The building and land value determines the property end value (Lönnqvist, 2015). Interest rate is a key factor for property price. The rising of interest produces property value decrease. (Laine, 2024) The price rises in Finland are summary of decreased interest rates, increase in the cost of construction and income level increases (Torkki, 2016). Distance from central business district (**CBD**) affect the price decrease exponentially (Kulish;Richards;& Gillitzer, 2011).

Supply and demand also affect the price of the properties, if there is small number of properties but high number of buyers the prices rise. Instead, the low demand and high property supply decrease the property prices. (Kulish;Richards;& Gillitzer, 2011) For estimating the House Price Index (HPI) is important to consider macro-economic variables such as interest rate, business cycle, currency movement, oil price shock, inflation and legislative and regulatory policy (Garg, 2016). According to Roininen, the end price of the property is a sum of the piece of land, the apartment, the condominium, and the other premises that the condominium might have. In the end the exact appreciation and price structure is difficult to exactly define because there is a human sentiment that might influence the price. For example, an apartment in the

same condominium with the same technical specs but in a different floor and with different orientation might be differently priced because it has better landscape than other. Rather than in stock market where the stocks are fully identical the properties have a lot of little variables that could affect the end price. (Roininen, 2018)

2.1.1 Four quadrant model

According to DiPasquale and Wheaton (1992) - which was the real estate market pioneering work – the price of real estate can be simplified in following equation:

$$P = \frac{R}{i} \cdot (1)$$

Where the P , is the price of the property, R is the net rental income and i is the interest level.

DiPasquale and Wheaton (1992) designed the four-quadrant model which is a theoretical framework whereby property prices can be examined in the long-time horizon. It consists of four different variables, which divides property markets into two segments, asset markets (left) and space markets (right). Simplified the model explains the market equilibrium based on supply and demand model and how one quadrant affect the other quadrants in the equation. (DiPasquale & Wheaton, 1992)

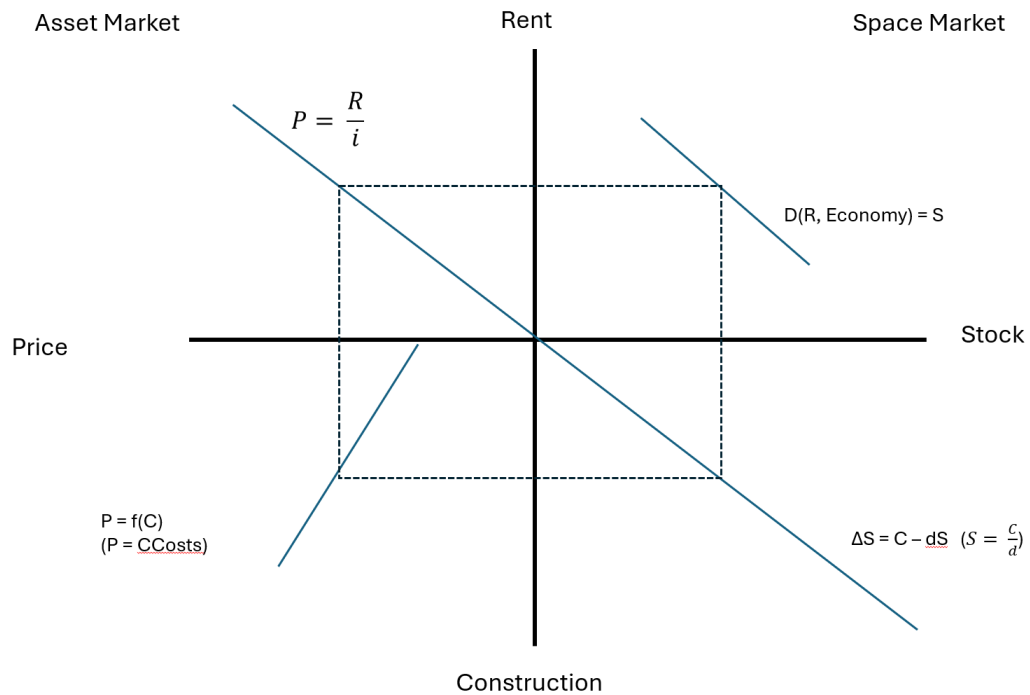


Figure 1: DiPasquale and Wheaton four quadrant model

The figure 1 presents the equilibrium conditions. The top-right quadrant tells the economy size according to rents. The higher the rent the less there is demand. The top-left quadrant tells the rent-price ratio. The slope symbolizes how much a property is worth in terms of a dollar per rent. When the slope is high the market is willing to pay low prices per property. The bottom-left quadrant tells how the volume of new construction is determined in the ownership market. In the short term, the supply of new construction is very static. The top-left quadrant defines the value which the construction company should pass underneath for making the building decision. The bottom-right quadrant defines the rate between new construction and the total supply. (DiPasquale & Wheaton, 1992)

When some of the previously mentioned factors change it produces in the short run imbalance. The imbalance led to a situation where the inner rectangle changes its shape, and it is not a rectangle anymore. That could be visualised in the following picture. (DiPasquale & Wheaton, 1992)

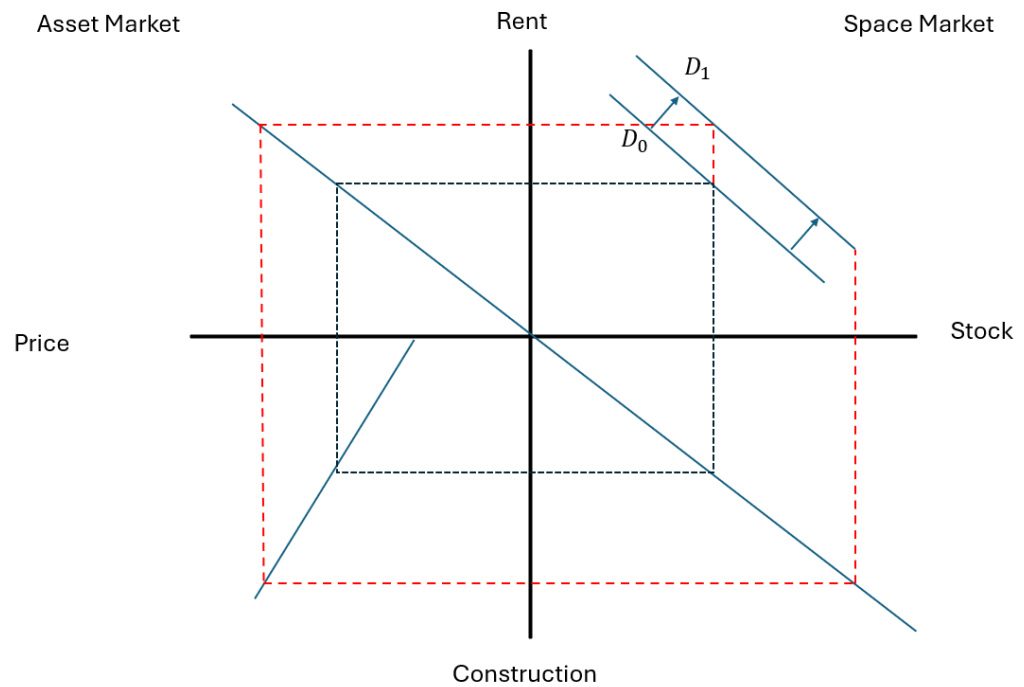


Figure 2: DiPasquale and Wheaton model in imbalance.

In the figure 2 the economy has grown. The economy grow affects the rent prices and the rent prices affect the property price. Because the properties start costing more the constructions firms can upper the prices. But new constructions cannot be produced because otherwise the stock doesn't match the ΔS . If the new line doesn't, make a rectangle it is an imbalance state, and the equilibrium will find somehow eventually. (DiPasquale & Wheaton, 1992)

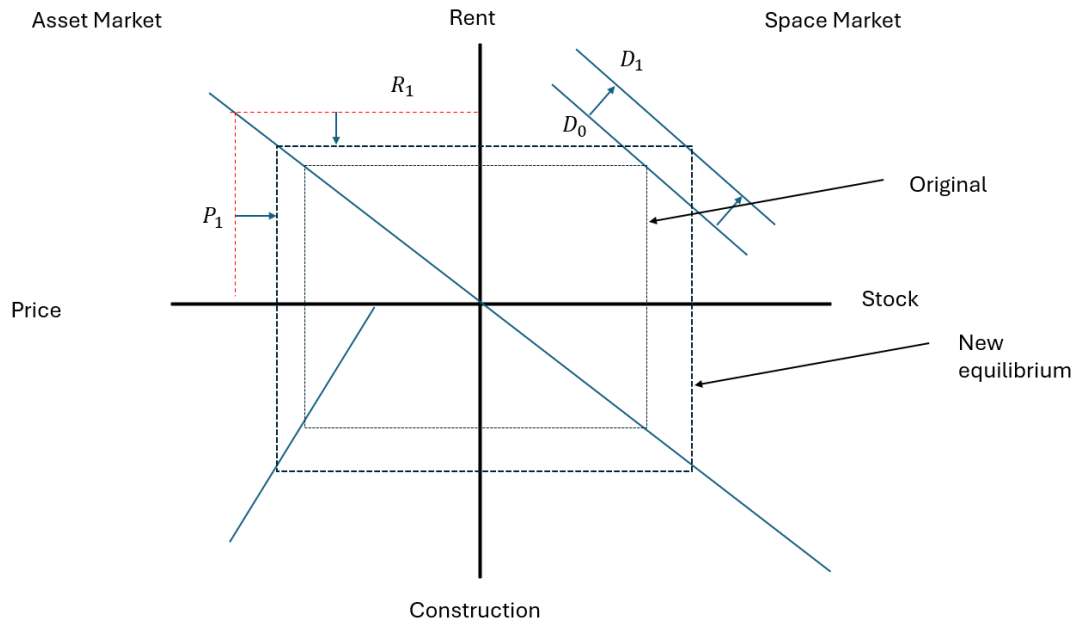


Figure 3: New equilibrium after one of the parameters changed

So, if the economy rises it rise the property values also eventually, but in the short run it could make a bubble. If the prices rise too quickly, they tend to find the equilibrium eventually and the market gets balanced. (DiPasquale & Wheaton, 1992)

2.1.2 Comparable Sales Method

In the comparable or repeat sales model the same property is sold more than one time in during the estimation period. The model was originally developed by Nourse, Muth and Bailey. The model is not complete because it doesn't get detailed information about the characteristics of the individual property. That method enables an easy comparison which is not complex. Case-Shiller later developed an extended model which incorporates the heteroscedastic error in the gap time between sales, and that model is named the weighted repeat sales model (WRS). (Garg, 2016)

2.1.3 Hedonic Pricing Model

The hedonic regression model controls the differences of the characteristics in the properties sold over changing periods of time. This model considers the distinctive characteristics of the properties for example the room quantity and the size (square

meters) of the property. The HPI's is constructed using the coefficients from this hedonic regression. (Garg, 2016)

2.1.4 Spatial Model

The spatial dependence assumes that the nearly located comparable observations will be most likely to be similar than those observations that are more apart. The explanatory factors could be the socio-economic factors, environmental conditions and other spatially correlated influences are most likely to be similar in a closer circle. (Cellmer, Cichulska, & Belej, 2020) Spatial models are not developed originally for housing price comparison, but they are applicable for that too. Spatial autoregressive model could work helping the understanding of how the price of a property does is affected by the property prices nearby. (Fischer & Getis, 2010)

2.1.5 Difference-in-Differences (DID) Model

The Difference-in-difference model is based on two separate comparison groups. The first group is the group that is affected of the intervention and the other group is not affected. (Bertrand, Duflo, & Mullainathan, 2004) As many other model the DID model is not originally designed just for property price comparison and it could be applicable in many other study fields. (Card & Krueger, 1994) The affected group is formally called the treatment group and the not affected group is called the control group. The estimations are made using Ordinary Least Squares (OLS) regression for estimating the impact of the intervention. (Bertrand, Duflo, & Mullainathan, 2004) The estimation formula is provided below:

$$Y_{ist} = A_s + B_t + cX_{ist} + \beta I_{st} + \epsilon_{ist},$$

Where Y_{ist} is the outcome of interest i in group s = neighbourhood at time t . A and B are fixed by s and t . X is the relevant individual control and ϵ_{ist} is the error term. I_{st} is dummy where the intervention has affected the group s at time t . The estimated impact of the intervention is the OLS estimate β . (Bertrand, Duflo, & Mullainathan, 2004)

2.2 Real Estate investing principles

The returns of real estate's consist of two elements which are the net profit of rent (cashflow) and the capital component which consist of the appreciation of the property (Roininen, 2018). Real Estate investing has many financial benefits such as regular cashflow and appreciation (Isberg, 2023). In addition, it provides leverage utilization and inflation protection (Bowa, n.n.). The regular cashflow comes from rents (Isberg, 2023). The utilization of leverage is one of the key points because real estate investing is so popular (Väänänen, 2025). The banks typically lend up to 70% of the price of real estate (Säästöpankki, 2025). Also, tax benefits are possible to utilize in real estate investing (Bowa, n.n.). While choosing the property to invest is important to consider following variables:

1. Location
2. Price
3. Apartment
4. Condominium

A typical rule is that if the location is good and the investment is made in a city centre of a growing city the risks are lower and the cashflow doesn't need to be overly high. If the property is bought under market price the estimated renting revenue goes up. The apartment size and properties define what kind of target group the apartment is suitable for. (Orava & Turunen, 2020) Because there is a rising amount of 1 and 2 resident households the smaller apartments are seen as typical real estate investing apartments (Roininen, 2018) & (Orava & Turunen, 2020). If the condominium is well organized, the regular overhauls are done, and the substitution is low there are better chances to succeed. (Orava & Turunen, 2020)

As any investment also real estate investing has its own risks. The risk/return ratio typically tells how much risk investor needs to take to get certain level of return. Typically, the U.S. Treasury bonds are seen as the lowest risk investment. (Chen, 2024) The main risks in property/real estate investing are tenant related risks, asset related risks, interest risk, political risks, and value risk. The typical tenant risks are that the tenant doesn't pay its rent at time neither at all. Also, an unreliable tenant might destroy the property, which leads costs and to renovation project and during that period is difficult to get the property rented. The asset related risks might be that the surfaces wear by the time, so it need to be renovated in certain period. Unpredicted damages also cause asset risks for example leaking accident or fire. Also, a bad condominium or poorly developing neighbourhood are asset risks. (Vuokranantajat, n.n.) Price and interest risks are devaluation of property price due to interest rise. The

property price value decrease risk is significant if debt leverage is too high. (Sjögren, 2023) Political risks could be changes in taxation or legislation for example in housing allowance. Also, geopolitical risks are good to evaluate. (Vuokranantajat, n.n.) The worst-case scenario is that all of previously mentioned risks are realized at the same time, meaning that interests get up, the condominium has a lot of maintenance backlog, the tenant doesn't pay it rent, and the property value goes down due to bad market situation. (Asuntopehtoori, 2021) Owning only one investment property is also a significant risk. Instead of centralizing all the capital in one specific property is better to have more than one property. Typically, many commoner people tend to think that owning ten investment properties is riskier than owning one, but the risks are lower. (Orava & Turunen, 2020)

Due to the multi element revenues real estate investments are popular. Both elements theoretically could protect from inflation if the renting terms are properly specified. (Roininen, 2018)

One of the most important KPI's that need to be calculated in real estate investing is the Renting Revenue. The renting revenue could be calculated with the following equation:

$$\text{Renting revenue} = \frac{(\text{Rent} - \text{substitutions}) * 12}{\text{Debt free price} + \text{repairing costs} + \text{transfer tax}}$$

It is important to note that there is twelve used as occupied months, but there might be less months of occupation due tenant migration or reparation periods. So, the real numerator needs to be adjusted depending on the real's occupation number. (Orava & Turunen, 2020)

In Finland there is only 800 000 properties out of 2 800 000 properties that are for rent. There are many root causes why Finnish nation has decided to live in own apartments and houses. According to portfolio theory only 5 – 15% of investment portfolio should be in real estate investments. During 2017 the mean property costed in Finland 164 000€. If the portfolio theory is followed, it means that a mean home buyer in Finland should have an investment portfolio of 1.6M€ to afford the mean property. Only a small percentage of Finnish citizens have that much money so according to the portfolio theory too many of mean home buyer couldn't really afford to buy and they should be renting. The author of the book estimates that the share between owning and renting will change in the future and the renting share will rise. That doesn't directly mean that real estate investing will be automatically profitable because the tenants' requirements will rise, and the expectations need to be fulfilled. Meaning that the appearance of the property needs to be good, and the characteristics need to be fulfilled the needs of the modern era. (Roininen, 2018)

Real estate investment has its own good and bad features. For example, real estates are an asset class that is not easy to liquidate. It could be seen as a good and a bad feature. Depending on the investment profile of each individual investor, the hard liquidity might be a good feature because it prevents or makes panic selling more difficult (Keskiäli, 2020). Other features of real estate investments are the tendency to conserve value. Property prices tend to follow the inflation. Understanding the business model of real estate investment could also be much easier than understanding the business model of a publicly listed enterprise, which is for instance a good feature. (Ross, Boyle, & Li, 2024)

2.3 Urban development principles

According to Sitra, moving from countryside's to cities is one of the key megatrends in today's world. There is an estimation that in the year of 2050 70% of world population will live in cities. The rapid population growth in cities challenges the infrastructure and building of the cities. The cities carry a big responsibility in getting durable and long-lasting solutions in terms of city design. (Sitra, 2023) Urbanization have been notable also in Finland where many of the provinces have lost a lot of inhabitants and the main three cities Helsinki, Turku and Tampere have gained them after the 1980's. One of the biggest migration segments are the immigrants who tend to migrate into the big cities or near to the eastern border. (Roininen, 2018) Businesses and households allow to pay higher prices for better accessibility (Loikkanen & Laakso, 2016).

2.3.1 Urban design

Key authors of modern urban design and town scaping became from the 1950s/1960s and early 1980s. Then the new urbanism theory born, where planners, architects and the public sector started to consider which is the best way to plan the best use of design and public spaces leading walkable neighbourhoods and human-scale environments. (Ratcliffe;Stubbs;& Keeping, 2021) Urban design means planning cities land usage, zoning, and functions. In urban design is important to consider the ecological and aesthetic factors of the cities. With urban planning cities try to improve its social and economic goals because urban planning plays a key role in developing, protecting, and preserving the urban areas of the city. (Jokinen & Honkala, 2000) The citizen movement of from city centres to cities more suburban areas challenges the urban design (Banister, 1995). The modern cities require more sustainable solutions

and less populism. The increment of well working urban transportation and the height building is a sustainable solution for urban design. Even height buildings are seen sustainable it is important to understand that the urban areas need also support areas such as nature and goods and service providers close to the apartment buildings. The inappropriate rate between city growing and modern moving methods lead to a city which cannot grow properly/more. (Knoflacher, 1995) The key driver for urban design is location selections made by businesses and households. (Loikkanen & Laakso, 2016)

The current strategy of Turku is moving Turku into the 2030's. In its vision Turku calls everyone to take part in experiencing, working, being frontrunner and making sustainable development – living its own best living time. Turku's values are citizen and service-oriented approach, accountability and equality and renewing and collaboration. (Turku, Kaupunkistrategia: Turku 2030-luvulla, n.n.)

2.3.2 Urban transportation

Transportation has a significant impact on economic development of urban areas. Each location (neighbourhood) attractiveness can be partly defined by the relative accessibility which depends on the quality and quantity of transportation infrastructure. Some cities have experienced that the increase of more urban road realization have provoked increased levels of traffic congestion. (Banister, 1995)

Urban transportation can be divided into many subcategories. The most commons are walking, biking, public transportation, and private cars. (Knoflacher, 1995) & (Ojala, 2003) Each of those categories have their pros and cons. Typically can be said that for big cities the public transportation is the key element for building well working transportation methods. It enables the city development and makes the moving from place to other meaningful. (Ojala, 2003) The public transportation has subcategories. The most common subcategories are bus transportation, railroad, metro, taxi, tram, electric scooter, city bikes and city ferries. (Traficom, 2025)

Tramways are fixed lines for an extended period. If the city is not pretending to enable the grow of those areas the tramway might become stiff and unfounded. If the transportation capacity doesn't need to be high the trams are not efficient solutions. (Knoflacher, 1995) Instead, if there is an enough population the tramway becomes the most efficient and sustainable way to move citizens between places. The transportation capacity of trams is 4000-15000 passengers per hour depending on the how many carriages are mounted. (Ojala, 2003)

The tramways tend to increase the value of surrounding properties. That is a sum of many distinct factors listed below:

1. Better accessibility to the city centre and for the service providers
2. Tramways increase the supply of new residences.
3. The city gets better urban development.
4. The environmental impact of the cities lower down
5. The neighbourhoods become more dynamic and accessible (Vilppola & Kangas, 2023)

The prediction of price is not easy and indisputable. For predicting and estimating the price there are few different methods that could be used hedonic difference-in-difference (DID) (Vilppola & Kangas, 2023) or Ordinary Least Square (OLS) method (Valaja, 2018). An example framework is to define the wanted distance to the nearest tram stop, definition of time when the dataset is collected and define the neighbourhoods where the data want to be collected. (Laamanen, 2024)

Public transportation could be measured from many perspectives. It provides multifactorial values. It improves the city development, it is safer because it decreases accident rates compared to private cars, it provides a more sustainable solution for the land using and it is much more sustainable than private cars while measured by carbon emissions. (Ojala, 2003)

2.4 Public project funding

The daily public transportation was 44% funded by the government, the municipality, and the rest 56% funded market-based by user payments in 2022. The turnover in 2022 was 2,83 billion euros while the government and municipality fundings where in total of 1,24 billion euros. (Traficom, 2025) According to Liikenne- ja viestintäministeriö, the government is not forced legally to arrange the transportation services except of certain special groups. (Liikenne-JaViestintäministeriö, 2013)

Ministry of Transport and Communications have published a report including a plan for the years 2021-2032. There is a straight citation from there: *“Central government contributions will provide the seed money for sub-regional projects and investments, such as tramway projects.”* In same report is also mentioned that depending on case-by-case EU is also one funder of transportation projects if they fulfil EU legislation requirements. (FinnishGovernment, 2021)

3 Research method

The main research method used in this study is integrative literature review. In the theory chapter 2 the main sources are peer reviewed articles and books. The sources in second chapter are searched going through previous thesis, using Finna to find out reliable sources and visiting public libraries. In the fourth chapter the main sources come from internet because the chapter focuses on the Tampere's tramway project. Also, statistical data and internet Power BI sources are utilized. One of the main topics of the fourth chapter is to find out what are the price impacts of the Tampere tramway project related to the property price appreciation. For finding that out there is used systematic searching strategy. In the fifth chapter there is also mainly used internet sources about Turku Tramway project. In addition, statistical data is used.

One of the most critical points in integrative literature reviews is to combine multiple theories and mix them using critical thinking. The key mix of this research is simplified in the framework provided in the fifth chapter. There are multiples variables and theories combined and presented if the Turku Tramway project could deliver some extra value for the investors. For the reader is important to notice than in chapters 4 and 5 many of the data presented of Tampere and Turku projects are not evaluated extremely critically. There are assumptions made, and the population sources are not questioned. The important thing of getting the population numbers is not to have an absolute correct statistical fact, the point is to get a ballpark to compare the projects to each other.

Source material is searched using different tools and methods. Finna, Google search, Google scholar, Turku Library, Perplexity.AI and even direct author contacting have been used for material searching. One of the sources is possible to get only from a different city university library computer, so the author was emailed and asked if it could provide its work as a source. For making the systematic search strategy I used Finna for finding the sources. In Finna I typed following words and used Boolean "AND" and "*" -operators:

*Raitio * AND asunt * AND Tamper **

That three-word sentence generated 126 results. After taking a quick look there was a lot of irrelevant sources so I decided to specify the search logic. The search was delimited selecting as material (suom. Aineistotyyppi) thesis and journal/articles. After the delimitation, the search generated seventeen results. Because the Tampere Tramway investment decision was taken in the end of 2016, the search was delimited for showing 2016 and newer sources. The result was fifteen sources. Those fifteen

sources were analysed but the majority were still irrelevant. At the end only seven sources were deeply analysed and those are presented better in the subchapter 4.4. The logic is presented in the following table:

Table 1: Research key words and logic

Search logic	Results
Raitio* AND asunt* AND Tamper*	126
Raitio* AND asunt* AND Tamper* + material delimitation	17
Raitio* AND asunt* AND Tamper* + material delimitation + date delimitation	15
Raitio* AND asunt* AND Tamper* + material delimitation + date delimitation + critical selection	6+1

One of the sources doesn't evaluate the Tampere's situation. Instead, it studies the potential of Turku tramway project (Larkela, 2020). That source is an especially important source because it evaluates critically the Turku project.

The first research question is answered in chapter 4. The second and third questions are answered in chapter 5.

The limitations of this research are that there is no actual property price data of Turku tramway project because the investment decision is not taken yet. In addition, all the sources are openly found from the internet or public libraries, so the actual insight information is not provided in this research. There might be many variables that are considered in closed doors, and those variables are not presented publicly. This research makes the assumptions just with the open source, so it is not suitable for decision making. Instead, it guides the reader for getting interested in the topic and make its own research in the future.

4 Literature review on Tampere's Tramway project

In this chapter Tampere Tramway project will be analysed. Tampere tramway project is a multi-phase project. The phase 1 is already built and use started in 2021. The phase 1 covered the Hervanta-City Centre-TAYS areas with line 1 and line 3. The phase 2 is already projected and built. The phase 2 divided into 2A and 2B and both are ready. The phase 2A started operating in august 2023 and the phase 2B in January of 2025. The phase 2 covered the area of City Centre-Lentävänniemi operating with line 1. In addition, Tampere decided to project and start building the Pirkkala-Linnainmaa tramway. (TampereenRatikka, Ratikan kustannukset, 2025) In this study the Pirkkala-Linnainmaa tramway will have the name of phase 3 even its not the official name.

4.1 Main metrics of Tampere Tramway

The local tax (kunnallisvero) of Tampere in 2025 is 7.6% (Vero.fi, 2024). Tampere has a population of +260 000 citizens by the end of Q4 2024 (Tampere, 2025). Tampere has already two lines operating. Both lines are planned to be extended soon.

4.1.1 Operating area and operating lines

Tampere Tramway has two lines (1 and 3) that are already operating. The line 1 end stops are in Kauppi Kampus and Pyhällönpuisto. The line 3 end stops are in Sorin Aukio and Hervantajärvi.



Figure 4: Tampere Line 1 and Line 3 Stops (TampereenRatikka, Tampereen Ratikka, 2025)

The line 1 has in total twenty stops and covers following neighbourhoods: Lentävänniemi, Lielähti, Santalahti, Pyynikki, Amuri, City centre, Tulli, Kaleva, Kissanmaa and Kauppi. The line 3 has in total seventeen stops and covers following

neighbourhoods: Hervantajärvi, Hervanta, Hallila, Turtola, Hakametsä, Kaleva, Tulli and City centre.

The line 1 passes through the neighbourhoods summing in total of +27 000 citizens (Tampere, 2025).

Alue	Tilastoalue ▼
Kaleva	6312
Lentävänniemi	5377
Amuri A (IV)	3168
Kissanmaa	2814
Amuri B (V)	2336
Santalahti	2184
Finlayson (I)	1901
Tulli (XVII)	1291
Pyynikki	993
Lielähti	707
Kauppi	310
Yhteensä	27393

Figure 5: Line 1 Neighbourhood population (Tampere, 2025)

Instead, the line 3 passes through the neighbourhoods summing in total of +43 000 citizens (Tampere, 2025).

Alue ▲	Tilastoalue ▼
Hervanta luode	11984
Hervanta lounas	7603
Kaleva	6312
Hervanta koillinen	4726
Hervantajärvi	3135
Hallila	2580
Hervanta kaakko	1939
Finlayson (I)	1901
Tulli (XVII)	1291
Turtola	1002
Hakametsä	820
Yhteensä	43293

Figure 6: Line 3 Neighbourhood population (Tampere, 2025)

In the figure 6 are marked all the neighbourhoods which are nearby the line 3.

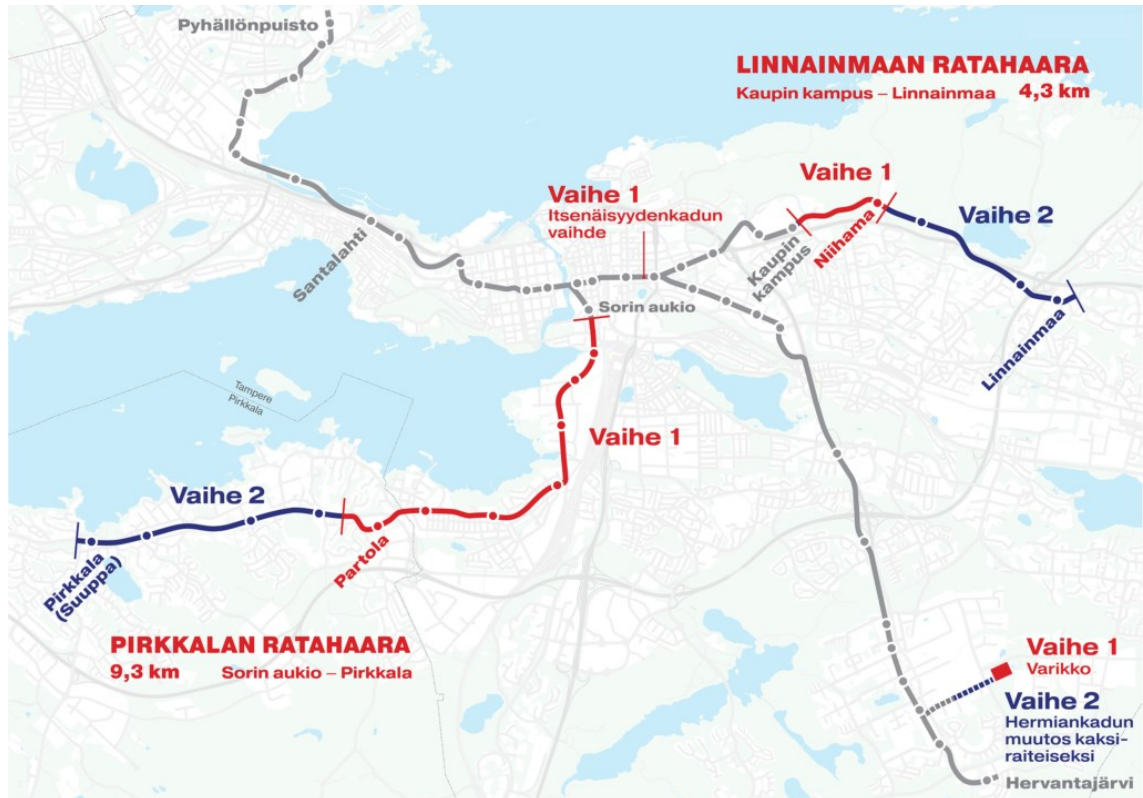


Figure 7: Tampere Tramway new projects (TampereenRatikka, Tampereen Ratikka, 2025)

In addition to Tampere's two operating lines (1 and 3), Tampere has decided to start phase 3 (in the Figure 7 is "Vaihe 2") building projects to cover new neighbourhoods. The first phase 3A will be the red one (Figure 7) covering areas from Pirkkala to Niihama (Linnainmaa). The construction project has been started in December of 2024 and will be completed until August of 2028. The second phase 3B is planned for construction during 2028 and 2032. The operation of the second phase is planned to start in 2032. (TampereenRatikka, Tampereen Ratikka, 2025)

4.1.2 Project delivery organization

The existing lines are made by Raitiotieallianssi. The project planification phase started in 2012 and finished in 2025. During the year of 2016 Tampere City decides about the project. Actual building phase starts on 2017. During August of 2021, the first phase of Tampere Tramway project gets ready in advance and under the estimated budget. (Raitiotieallianssi, Raitiotieallianssin tarina, 2025)

Raitiotieallianssi consists of subscriber parties and service provider parties. The subscribers are Tampere City and Tampere Raitiotie Oy. The service providers are NRC Group Finland Oy, Sweco Finland Oy, YIT Infra Oy and Afry Oy. (Raitiotieallianssi, Tietoa, 2025)

4.2 Challenges and successes in Tampere Tramway project

As the Tampere Tramway project has two operating lines, and both have been decided to extend the overall cost need to be calculated for having a good comparison point for the Turku project. According to Tampereen ratikka, the first project Hervanta-City Centre-TAYS costs where in total 210,58M€.

Kustannukset raitiotien osa 1: Hervanta–keskusta–Tays

Tampereen kaupunginvaltuusto hyväksyi raitiotien osan 1 investointipäätöksen 7.11.2016.

Kaupunginvaltuuston hyväksymä Raitiotieallianssin osan 1 toteutussuunnitelman mukainen rakentamistapa-alueen tavoitekustannus on **219,02 miljoonaa euroa**. Raitiotien osalle 1 on hankkeen aikana tullut sisällön muutoksia kuten Hatanpään valtatie raitiotiehaaran rakentaminen.

Raitiotien osa 1 valmistui kokonaisuudessaan kesällä 2021 etuajassa ja alle budjetin. Liikennöinti osalla 1 aloitettiin elokuussa 2021.

Raitiotien osa 1	Valtuusto 7.11.2016 (MEUR)	Kaupunginhallitus 2017–2021 (MEUR)	Hatanpään haara (KH 25.11.2019)	Yhteensä (MEUR)	Ennuste (MEUR)
Osan 1 suunnittelu (KAS 1)	10,50			10,50	10,48
Osan 1 rakentaminen (TAS 1)	219,02			219,02	198,04
Tilaaajan hankinnat	4,20		0,32	4,52	4,52
Tilaaajan riskivaraus	3,20		0,24	3,44	3,44
Bonuspooli	1,88		0,20	2,08	9,44
	238,83			239,56	225,92
Hankkeen sisällönmuutokset		5,17	16,60	21,77	21,77
Indeksikorjaukset				11,07	11,07
Varikon varustelu ja infran kunnossapitokalusto				9,63	9,63
Rakentamisen aikaiset aktivoinnit				5,77	5,77
Valtion tuki				-63,58	-63,58
Kustannukset yhteensä				224,22	210,58

Figure 8: Costs of Tampere Tramway project part 1 (TampereenRatikka, Ratikan kustannukset, 2025)

As notable the estimated costs were 219,02M€ and the realised costs underpasses the estimation being 210,58M€. But without considering the state support the actual costs were 274,16M€. So, the reality is that for Tampere’s citizens the project is successful, but the project itself overpassed its estimations.

Raitiotien osa 2: Pyynikintori–Lentävänniemi

Tampereen kaupunginvaltuusto hyväksyi raitiotien osan 2 investointipäätöksen 19.10.2020. Rakentaminen alkoi marraskuussa 2020.

Kaupunginvaltuuston hyväksymä Raitiotieallianssin osan 2 toteutussuunnitelman mukainen rakentamisvaiheen tavoitekustannus on **99,49 miljoonaa euroa**.

Raitiotien osa 2 valmistui kokonaisuudessaan vuoden 2024 lopussa aikataulussa ja alle budjetin. Liikennöinti osalla 2A aloitettiin elokuussa 2023 ja osalla 2B tammikuussa 2025.

Raitiotien osa 2	Valtuusto 19.10.2020 (MEUR)	Ennuste (MEUR)	Toteuma 31.11.2024 (MEUR)
Osan 2 suunnittelu (KAS 2)	2,90	2,90	2,90
Osan 2 rakentaminen (TAS 2)	84,87	84,87	84,35
Tilaaajan hankinnat	1,00	1,00	0,42
Tilaaajan riskivaraus	1,48	1,48	0,24
Bonuspooli (50 %:n budjettivaraus)	0,88	0,88	0,00
	91,13	91,13	87,91
Hankkeen sisällönmuutokset			0,42
Indeksikorjaukset	3,10	3,10	0,00
Radan kunnossapitolusto	1,96	1,96	1,40
Pysäkkien katosankinnat	0,34	0,34	0,28
Taidehankinnat	0,46	0,46	0,34
Rakentamisen aikaiset aktivoinnit (mm. korot, palkat)	2,50	2,50	3,50
Valtion tuki		-24,87	-22,13
Kustannukset yhteensä	99,49	74,62	71,72

Figure 9: Tampere Tramway Pyynikintori-Lentävänniemi Costs (TampereenRatikka, Ratikan kustannukset, 2025)

Instead in the phase 2 the planned costs were 99,49M€ and the realised costs were 71,72M€ without taking the state support into account. With the state support the overall costs were 93,85M€ which also underpass the estimated costs.

In this study we are not going to dig into the phase 3 of Tampere project because it is not necessary and relevant for the comparison with Turku. Considering all the costs of phase 1 and 2 in Tampere we get as a final number 368,01M€. That will give the ballpark while comparing it with Turku Tramway project.

4.3 Main differences in Turku and Tampere project

Kirjoita Hervanta – Keskusta välistä, tutki paljonko on Hervannan väkiluku ja kuinka paljon Hervanta on kehittynyt viimeisten 30 vuoden aikana. Tutki hervannan uudisrakentamisen tasoa. Vertaa näitä tekijöitä Turun Varissuon vastaavanlaisiin lukuihin.

4.4 Property value increase in Tampere according to previous research

I have found many interesting previous research about the Tampere Tramway project positive appreciation into the property values. The research is presented in the following table for having a quick comparison on them.

Table 2: Tampere housing price increase

Author	Price increase	Note	Reference
Aaro Laakkonen	+6,4-7,9% (+1,9-5,5% increase in rents) during period of 2017-2020 +2,7% (0-2,6% increase in rents) during period of 2013-2016	Used DID method. In this study also the rents were analysed	(Laakkonen, 2023)
Anniina Valaja	+2,8% during period of 2015-2018	Used OLS method. Within 800m of nearest stop Increase due just the confirmation of project phase 1 starting	(Valaja, 2018)

Reni Kangas and Valtteri Vilppola	<p>+7,4% price increase within 400m of stop</p> <p>+6 price increase within 400-800m of stop</p> <p>+6% in Phase1 (2016-2021)</p> <p>+11,6% in Phase2 (2020-2023)</p>	<p>DiD method 2016-2023</p>	<p>(Kangas & Vilppola, 2023)</p>
Oskari Laamanen	<p>+2,4%/year (optimistic)</p> <p>+1,2%/year (pessimistic)</p>	<p>Used OLS method. Prediction of Phase 2 areas only</p>	<p>(Laamanen, 2024)</p>
Sara Hietaneva	<p>+25,1% near to Tramway</p> <p>+39,5 outside of Tramway</p> <p>+27,5% overall in Tampere</p> <p>during period of 2016-2022</p>	<p>The price near to tramway didn't rise in the same relation than in other areas. The starting price of the tramway area properties where from the beginning higher. That explain why the percentage is not as big. The tramway area demand remains more stable than other areas.</p>	<p>(Hietaneva, 2024)</p>
Saara-Lamia Mouhoub	<p>+ 24,35% (1room)</p> <p>+17,7% (2room)</p> <p>+12,2% (3room)</p>	<p>The study doesn't exclude the price appreciation from</p>	<p>(Mouhoub, 2022)</p>

	during period of	other sources than tramway	
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According to the table it is hard to say one clear numerical conclusion. Instead, it is extremely easy to say that the tramway project has had a positive impact for the prices of properties in whole Tampere. It doesn't matter if the property is alongside of the tramway or not the price of the properties tends to rise. In addition is particularly good to notice that there are also studies that have studied the rent price increases (Laakkonen, 2023). As in one study is concluded the price increases alongside of the tramway may be more moderate than in other areas of the city but the absolute measure is not only the price change. It is good to notice that new constructions tend to increase the area prices more than mean and if the new constructions are not located alongside the tramway, it affects the price change in alongside the tramway. Also, it is good to understand that the square prices along the tramway where initially higher than elsewhere meaning. One particularly important thing to note is that the demand of the areas with immediate access to the tramway remains much more stable. (Hietaneva, 2024)

Answering the first research question:

According to previous research how much (if any) Tampere tramway project generated property price increase in its own tram project?

For providing an exact number of it is impossible to conclude according to previous research. What is possible to conclude is that the tramway project of Tampere made the whole city more attractive. Some of the research show that there are some neighbourhoods that are not linked directly to the tramlines that suffered an even more abrupt price increase than the neighbourhoods that where in direct accessibility to the tramlines. What is also interesting is that even the price might not increase so much in the neighbourhoods along the tramlines the demand of those areas strengthens and became more stable. That is an interesting fact in terms of risk mitigation. The potential revenues are not so big, but the volatility is lower, so the risk/return share is better.

4.5 Tampere Income Statement and Balance sheet of 2023

According to 2023 Tampere's financial statement Tampere have made a profit of 55 315 000€. The Balance sheet end value is 2 412 227 000€. The liabilities are divided into long term and short-term liabilities. The amount of long-term liabilities is 631 028 000€ and the short-term liabilities are 459 728 000€. In total all liabilities are 1 090 756 000€. According to the financial statement there lives 255 050 inhabitants. The amount of loans and rental liabilities per habitant is 5 079€. (Konsernihallinto, 2024)

LAINAMÄÄRÄN KEHITYS

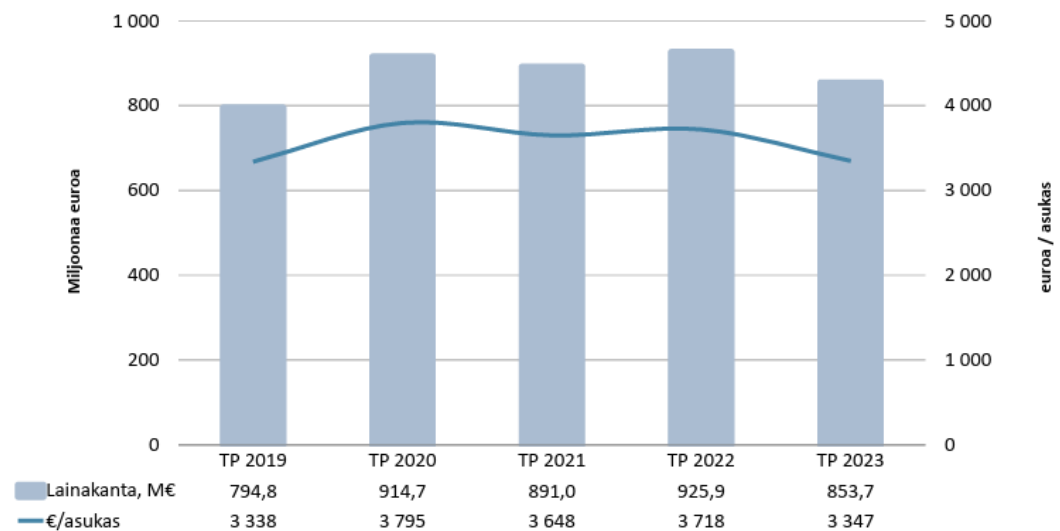


Figure 10: Tampere Loan Trend (Konsernihallinto, 2024)

While observing the Figure 10, we can conclude that during the period of 2019 to 2023 the loan amount of Tampere has been little bit increasing while the loan per habitant have been a little decreasing.

5 Empirical research: The impact to housing prices in Turku

5.1 Framework

As in the theory chapter is said, there are a lot of variables that need to consider for a property price estimation. There are so variables that affect the outcome. In this study the main variables that will be compared are population size (affecting supply and demand), area of impact (affecting time getting to the service centres), price of money, meaning the interest level (affecting the price of properties), purchasing power (affecting how much a regular citizen is able to put for investing or own housing without affecting its other spending).

Table 3: Benchmarking tramway projects of Turku and Tampere

KPI	Turku Tramway	Tampere Phase 1 and 2	Positive/negative relation compared to Tampere
Ground	Loam/Rock	Moraine/Rock	-
Population	52324	61 182 (Phase 1 and 2 summed)	-
Services	3 University Campus IT-City TYKS Port of Turku Housing	3 University Campus Tays Hervanta (expanding neighbourhood) Housing	+
Project	One line	Two lines with extensions	+
Project Estimated costs	344M€ + 42M€ Total of 386M€	368,01M€ + Line 1 Trams 82,01 M€ and Line 3 Trams 38,83M€ Total of 488,85M€	+
Immaterial benefits of having	Yes	Yes	+ -
Global Economy Situation	2025-2030 instable economy	2016-2025 During phase 1 2016-2021 stable economy During 2021-2025 instable economy	Neither

Analysing one KPI at a time starting by ground we can get a more detailed understanding of the project. The ground in Turku is more challenging than it is in Tampere. That increases the possible costs of the project. The population across the proposed tramline is less than in Tampere in both tramlines in total. That affect also negatively to the investment decision. Instead in Turku the one line covers more services than in Tampere both lines, meaning that the tramline layout it is better designed than in Tampere. Having all services across one line is more functional and underlays those sectors services improvement for the future. In Tampere, the critical point for improving services need to be nearby the crossing of both lines, otherwise the functionality is not so good.

The project estimated costs are calculated in 2022 (Turunraittiotie, 2025). It differs from Tampere that in Tampere the number is for actual costs while in Turku it is an estimation. For a better comparison there should be discount the actual cost of Tampere lines to present value and wait for a more topical calculation made by Turku. For making a simplified calculation the Tampere project can be discounted into 2022 present value. It means that phase 1 and tramlines 1 and 3 will suffer a price increase while phase 2 will have a price decrease. For having a quick calculation an internet calculator will be used (Tilastokeskus, Rahanarvonmuunnin, 2025). According to Tilastokeskus Rahanarvonmuunnin (in English Present Value Calculator) the phase 2 costs from 2024 to 2022 value are $0.93 \cdot 93,85\text{M€} = 87,28\text{M€}$. For a real calculation we will need to know better the actual payment events, but this ballpark number is enough for that estimation. Instead, the phase 1 will need to multiply the number by 1,07. The phase 1 costs from 2021 to 2022 present value are $274,16\text{M€} \cdot 1,07 = 293,35\text{M€}$. In addition, the tram prices need to be adjusted also $82,01\text{M€} + 38,83\text{M€} = 120,84\text{M€}$ multiplied by 1,07 from 2021 to 2022 present value the trams costed 129,29M€.

Table 4: Turku and Tampere project price comparison in 2022 present values

	Turku 2022 Value	Discounted Tampere Values to 2022 value
Trams	42M€	129,29M€
Project	344M€	293,35M€ (phase1) + 87,28M€ (phase2)
Total	386M€	509,92M€

For having another calculation, we can calculate the price of project + tram per capita living alongside the tramways.

$386\text{M€}/52324 = 7377,1\text{€}/\text{person}$ living next to the tramway in Turku. If the same calculation is executed for Tampere $509,92\text{M€}/61182 = 8334,5\text{€}/\text{person}$ living next to Tampere tramway.

After all these calculations is important to clarify that those are far from exact numbers. The only function that those calculations have is to have an ambiguous comparison of both projects. In terms of provided numbers it seems that if the Tampere project is seen as a success story, Turku also have arguments in its favour for executing the tramway project.

In addition to the framework KPI there is one dimension that need analyse. Due Turku, Tampere and Helsinki are the three cities that absorb the most migrating inhabitants (Roininen, 2018). If Turku wants to still compete with Tampere and Helsinki it needs to develop its functionality. For developing its functionality, it needs to take urban development into account, because Varissuo is in danger to segregate. In addition, the functionality comes for well working public transportation. The planned tramway project could decrease the segregation risk of Varissuo, it could improve the competition of inhabitant migration to Turku instead of Tampere or Helsinki and it could improve the transportation inside of the city.

Answering the second research question:

What are the key similarities and differences between fulfilled Tampere project and upcoming Turku project?

The similarities between Turku and Tampere are that both cities compete for the same migration population. Both cities grow but Tampere grows a little bit more than Turku.

Both cities have similar kinds of services, and both cities are in terms of Finland equivalent in terms of their inhabitant's amount. In both projects in the decision taking time the uncertainty factors of the future where hard to predict.

In terms of tramway projects the estimated costs of Turku seem to be lower than in Tampere which can be seen as a difference. In addition, in Turku is planned only one tramline and in Tampere there are two separated lines. Technically the ground of Turku is more challenging than in Tampere. A key difference between Tampere and Turku in 2025 is that Tampere has a much better working public transport than Turku.

5.2 Topical information

The actual 2025 local tax (kunnallisvero) of Turku is 7.1% (Vero.fi, 2024). The population of Turku is + 201 000 while the population of Tampere is + 255 000 (Tilastokeskus, Kuntien avainluvut, 2025).

Avainluku, tiedot vuodelta	Turku	Tampere
Väkiluku, 2023	201 863	255 050
Väkiluvun muutos edellisestä vuodesta, %, 2023	2,0	2,4
Alle 15-vuotiaita, %, 2023	12,2	12,6
15-64-vuotiaita, %, 2023	67,3	68,5
Yli 64-vuotiaita, %, 2023	20,5	18,9
Ruotsinkielisiä, %, 2023	5,4	0,5
Ulkomaan kansalaisia, %, 2023	9,4	6,8
Taajama-aste, %, 2022	99,1	98,7
Syntyneiden enemmitys, henkilöä, 2023	-590	-256
Kuntien välistä muuttovoittoa/-tappiota, henkilöä, 2023	1 424	3 145
Perheitä, 2023	47 630	61 762
Asuntokuntia, 2023	114 665	144 123
Rivi- ja pientaloissa asuvia asuntokuntia, %, 2023	23,4	22,3
Vuokra-asunnoissa asuvia asuntokuntia, %, 2022	51,8	51,5

Figure 11: Turku vs Tampere Population distribution (Tilastokeskus, Kuntien avainluvut, 2025)

Even the comparison in this study is done only in Turku vs Tampere, it will be good to consider also the closest areas of each city and take a quick comparison between Varsinais-Suomi and Pirkanmaa.

Väestötietoja maakunnittain

Maakunta	Väkiluku 31.12.		Väkiluvun muutos, %
	2022	2023	2022-2023
Uusimaa	1 733 033	1 759 537	1,5
Varsinais-Suomi	485 567	490 786	1,1
Satakunta	212 556	211 740	-0,4
Kanta-Häme	169 537	169 547	0,0
Pirkanmaa	532 671	539 309	1,2

Figure 12: Varsinais-Suomi vs Pirkanmaa population in 2022 and 2023 (Tilastokeskus, Väestö ja yhteiskunta, 2025)

As we can see the population in Varsinais-Suomi was +490 000 in 2023 while the one-year increase was +1,1%. In Pirkanmaa the similar numbers were +539 000 in 2023 and increase of +1,2%. (Tilastokeskus, Väestö ja yhteiskunta, 2025)

By the moment, this thesis is under work the market situation is challenging. The price of money has suddenly decreased from its top around 4.2% (in 2023) to about 2.5% (SuomenPankki, 2025).

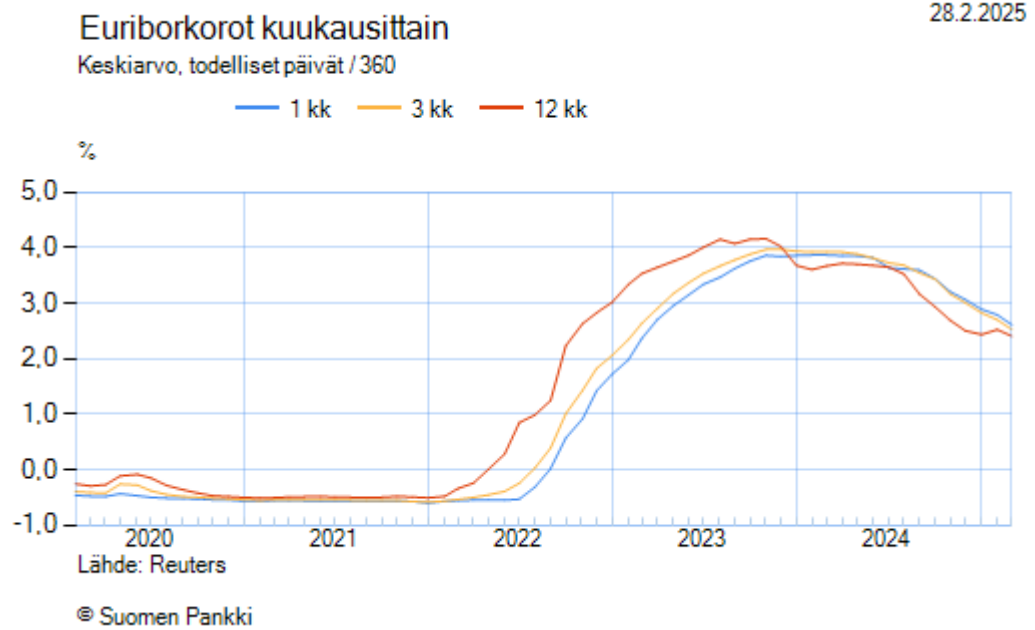
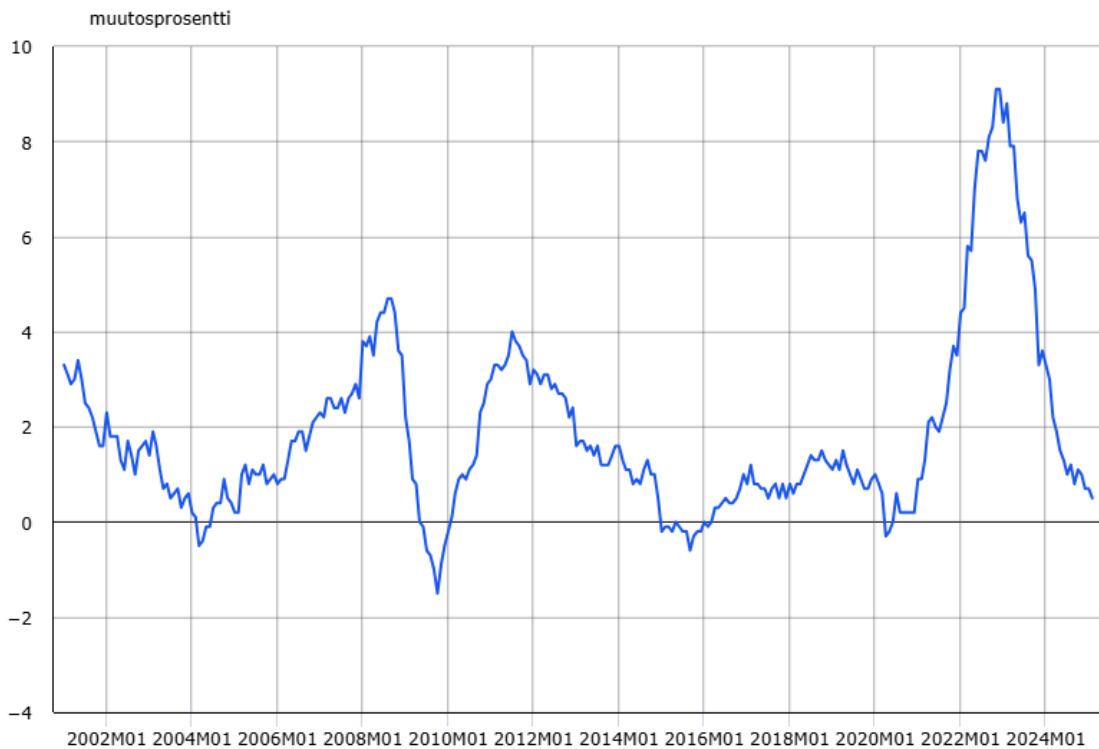


Figure 13: Euribor interests 2020-2025 (SuomenPankki, 2025)

In addition to the changed Euribor there are many influential factors which involve in the development of future property prices. The reconstruction of Ukraine is ongoing even though there is no peace yet (EuropeanComission, n.n.). If Ukraine gets the peace and Ukraine starts to reconstruct itself the price of raw material will increase due supply and demand (Karjalainen, 2025). As in the model of DiPasquale and Wheaton is explained, the increase of prices in raw material affects the bottom-left quadrant which affects other quadrants with a delay and increase the property values.

Kuluttajahintaindeksin vuosimuutos 2001M01-2025M02



Lähde: Tilastokeskus, kuluttajahintaindeksi

Figure 14: Inflation in Finland (Tilastokeskus, Tilastokeskus, 2025)

According to Figure 14 the inflation Year-over-Year (YoY) in February of 2025 in Finland was +0,5%. In addition, Teknologiateollisuus ry which is the main driver of workforce salary increase make a collective agreement for years 2025-2027 increasing the salaries by 7,8% in three years. For the year 2025 the salary increase will be 2% + 0,5% total of 2,5%. (Teknologiateollisuus, 2025) In other words, if the inflation is 0,5% and the mean of salaries is 2,5% there is a positive impact in the buying power of the citizens.

In the other hand there is an overly sensitive situation because many of the property funds are being frozen. In the beginning of 2025 six different banks and investing institutions decided to freeze their property funds. (Ranta, 2025) There are in open property funds over 250 000 owners which cannot get their moneys out of them. The situation might take a lot of time, even years, until it normalizes. (Huusko, 2025) According to some estimation the property funds might take huge over 30% decrease in the short run and revive back in 5 years (Tegelberg, 2025).

Table 5: Price increase positive and negative scenarios

Positive impact	Note	Negative impact	Note
Increase of purchasing power	Inflation -0.5 + 2,5% = 2%	Overpriced property funds	-30%
Euribor decrease	3% -> 2% in 2025	Political insecurity	Investors fear
The increase of raw material costs tends to increase the price of old properties	~10% in the following few years		
The decreased amount of building during 2023-2025	-16% 2023 YoY -7% 2024 YoY +4% 2025e YoY (Inderes, 2024)		

The Table 5 presents the possible positive and negative impacts that might cause property price increases in the medium-term future if the factors are analysed using DiPasquale and Wheaton Four Quadrant Model.

5.3 Turku Income Statement and Balance sheet of 2023

According to 2023 Turku's financial statement Turku have made a profit of 30 474 000€. The Balance sheet end value is 1 938 497€. The liabilities are divided into long term and short-term liabilities. The amount of long-term liabilities is 701 303 000€ and the short-term liabilities are 306 066 000€. In total all liabilities are 1 006 369 000€. According to the financial statement there lives 201 889 inhabitants. The amount of loans and rental liabilities per habitant is 5 433€ (Kaupunginhallitus, 2024)

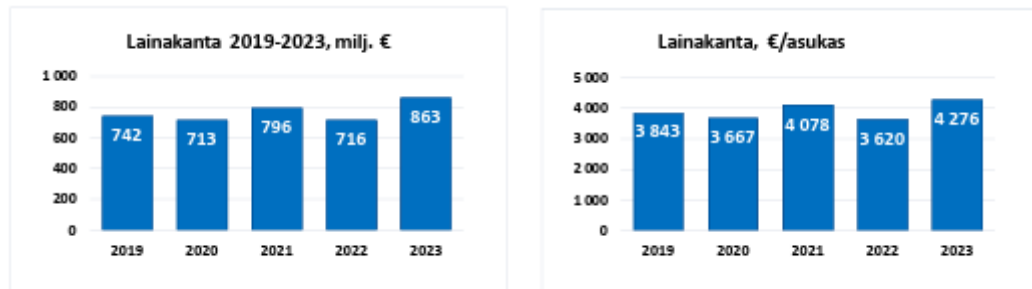


Figure 15: Turku Loan Trend (Kaupunginhallitus, 2024)

While observing the Figure 15, we can conclude that the trend of years 2019 to 2022 the absolute loan amount and loan per habitant have been decreasing, the last year 2023 changed both trends.

While comparing the financial situation of Tampere and Turku if the last year 2023 is excluded from calculating it seems that both cities have strong financial situation. For a more detailed analysis it should be understood why between 2022 and 2023 Turku's loan amount has increased. According to Tilinpäätös 2023 of Turku, the increase is affected by increased amount of long term loans (75,7M€) and the increase of short term loans (60,0M€) (page 33) but a more detailed information is not provided (Kaupunginhallitus, 2024). One explanation for the increment of loan amount is the rise of investment expenditures. (Kaupunginhallitus, 2024)

5.4 Area of impact

The impact area could be defined in many ways. In this research we can define that the immediate impact is could be defined using 10-minute walk as a reference for the nearest tram-stop. In the following Figure 16, we can see the main planned road for the tramway.



Figure 16: Planned Turku Tramway (Raitiotie, 2025)

According to the Figure 16, the tramway will have 20 pcs of stops per direction (total of 40 stops) and will operate from the Port of Turku to Varissuo. The tramway goes through following neighbourhoods: Port of Turku - Herttuankulma – Port Arthur - Iso-Heikkilä - Old Train Station – Centrum – Yliopistonmäki – Hospital - Kupittaa – Itäharju – Laukkavuori/Pääskylvuori – Hurttivuori – Varissio. The tramway is about 12 km long plus 1.1 km of depot (located in Iso-Heikkilä). The operating frequency is designed to be 7,5 minutes with a fleet of thirteen trams. (Raitiotie, 2025)

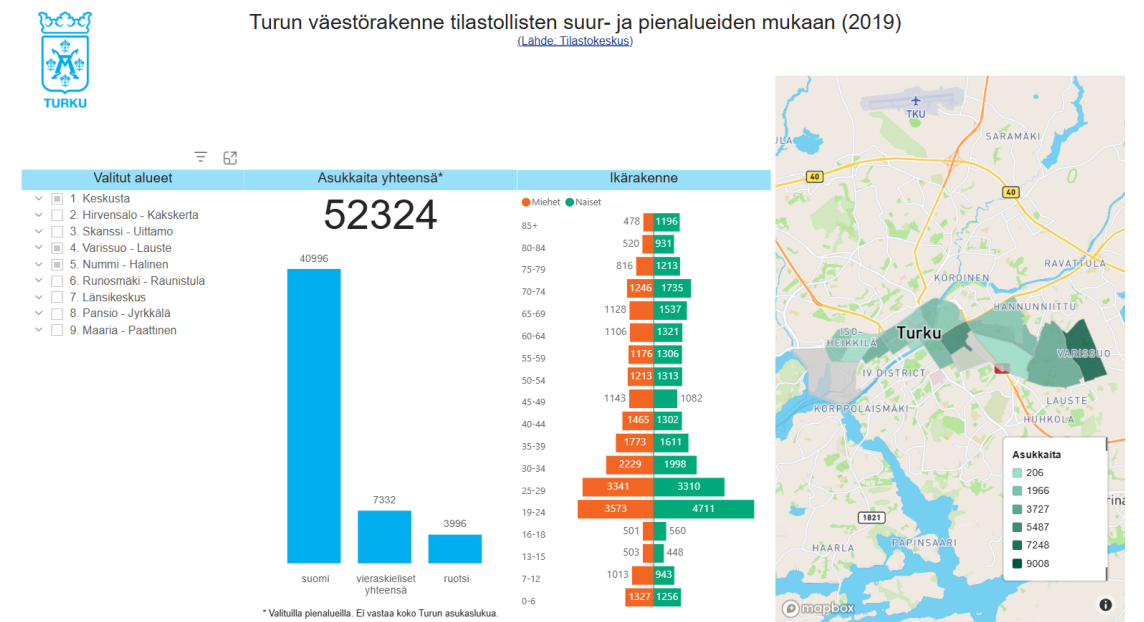


Figure 17: Population by the tramway (Koskela, 2020)

According to a public source in internet, the tramway will pass through previously mentioned neighbourhoods where lives in total of approximately 52 000 citizens of Turku (Avoindata.fi, 2020). According to the population size, the Turku Tramway project is better to compare to the Tampere line 3 than to the Tampere line 1 project. While benchmarking Turku tramway project and Tampere line 3 tramway project we can compare that in Turku the estimated population size is bigger (+52 000 (Koskela, 2020) vs +43 000 (Tampere, 2025)).

5.5 Comparing areas surpassed by the tramway

I will compare the Turku Tramway project in four major categories which are the city centre (Turku vs Tampere), Kupittaa vs TAYS, the southern stop (Varissuo vs Hervanta + Hervantajärvi) and the northern stop (Port of Turku vs Sorin aukio)

We can assume that in Turku the influenced sectors are Kupittaa and the City centre. That's a result from the service concentration. In the city centre are located all the shops, restaurants, bars, and entertainment places. In turn in Kupittaa are located the hospital, the IT-city where are many of the enterprises located and the university campus. We can assume that the city of Turku and the city of Tampere are close to compare with each other. Instead Kupittaa as area is difficult to compare directly with any of Tampere's areas because it has housing, hospital, university campus (TYKS, TUAS and UTU) and IT-city all in one single area. TAYS is the nearest comparable area to Kupittaa but in TAYS area there are only hospital and two university campus (TAYS and TAMK), while in Turku there are three different.

In the southern end stop Tampere line 3 Hervanta is much bigger than Varissuo. In Hervanta and Hervantajärvi there are in total of +29 000 (Tampere, 2025) citizens including the Hervanta campus and shopping centre while in Varissuo there are only +9000 (Koskela, 2020) citizens including a much smaller centre of services than in Hervanta.

In the northern end stop the Port of Turku is has an entertainment centre and a centre of employment while Sorin aukio itself can be seen as the city centre of Tampere. Instead, if the comparison is done jumping of the line 3 and taking the line 1 to Lentävänniemi, there are only housing which means that Turku end stop in Port of Turku has more than only one function.

As a very simplified analysis there can be stated that the Turku tramway project covers the same services than Tampere covers with both lines. If we only benchmark Turku

tramway project vs Tampere line 3 project, it could be easily stated that Turku covers a much wider service and population range. For a more realistic comparison there should be compared Tampere line 1 + Tampere line 3 projects with the Turku tramway project. For the more complex comparison we will need to sum the population of figure 5 and figure 6 together and take into account that there are some neighbourhoods so for getting the right population both should be summed and the duplicates need to be removed $43\,293 + 27\,393 - \text{Kaleva (6312)} - \text{Tulli (1291)} - \text{Finlayson (1901)} = 70\,686 - 9\,504 = 61\,182$ (Tampere, 2025).

5.6 Mostly influenced areas.

Due to estimations, I predict that Kupittaa will be the most influenced area. First, the square prices in Kupittaa are one of the highest in Turku now. According to Hietaneva's study that will mean that the price change will not be so big there (Hietaneva, 2024). But when all of other factors are taken into account such as the amount new constructions, the potential new projects such as Kupittaa x Itäharju "Terävin Kärki" (TurkuTiedepuisto, 2025) and the concentration of services, employments and housing will lead that the tramway project will improve the accessibility of Kupittaa area and it will become even more interesting area than it is by the moment.

5.7 Tramway impact on housing demand

According to table 2, the sources advocate all price increases in Tampere. Some of the sources have managed to delimit the price increases somehow delimiting just the impact of the tramway effect. Other sources have just researched the price increases of Tampere neighbourhoods without considering the tramway variable isolating it from the other factors. According to we have introduced in the second chapter, the price structure of the real estates is complex and have many variables to consider. That's why is better to focus on those sources that have already been able to isolate the tramway effect out of other variables. According to those sources, all present a positive impact in housing prices.

For being more specific we need to analyse the Tampere key metrics to be able to discount the possible price effect for Turku. Making a comparison of Tampere and Turku in the table 3 with seven different indicators we can say that in three of the indicators Turku has an advantage related to Tampere. Instead in two factors Turku has

a disadvantage, and two factors can be seen neutral. To be specific the “Immaterial benefits” which is now seen as neutral is somehow more a Turku benefit than disadvantage in case that Turku defines to do the tramway project. A clear argument for that is that if Turku wants to compete with Tampere and Helsinki of the migrating inhabitants, it needs to get its mobility system at least as good than those cities. Otherwise, the migration could happen mostly in the future just into Helsinki and Tampere and that could be seen as a disadvantage for Turku. So having the tramway or a more flexible but better working public transport will have an impact on the housing demand in terms of migrating inhabitants.

The tramway project can of course have also negative impacts. The tramway project is financed using loaned money. If the tramway project gets prolonged, the interest rise, and the future Turku city development is not enough good that could lead to a negative migration from Turku to other cities. That could produce an unfavourable situation, and the wanted benefits could be turn into negative impact for the housing demand. As is presented in the second chapter, every financial decision has its risks. For mitigating the risks there should be clear and realistic plans.

For a more detailed analysis there should be do a weighted risk matrix. The table 2 could be taken as baseline and there could be scored each seven distinct factors separately. After that weighted score, it can be determined more specifically if the project is still good or not.

As in the second chapter is introduced, households are ready to pay higher prices for good accessibility (Loikkanen & Laakso, 2016). In terms of real estate owning, it means that if the price will rise. In terms of real estate renting, it means that the number of renters will be higher than previously. In the short run that leads to higher demand with same amount of supply. In the long run the situation stabilizes (DiPasquale & Wheaton, 1992).

6 Discussion

There are too many factors to consider for predicting if the Turku tramway project will be a success story or not. According to all previously mentioned theoretical views and topical situation it could be debated the actual benefits of the tramway project. That's why the numbers are involved to the comparison for having a clearer righteous comparison.

While comparing the situation of Tampere and Turku it can be argued that Tampere have had a slightly stronger financial record. It can be argued that Tampere have also had a very versatile way (alliance) of leading the project. It could be concluded that in Tampere the overall urban development has also been in a bigger scale than in Turku for the previous years. For example, the filling of Näsijärvi inevitably increases the price of land. As Lönnqvist have stated the property end value is a sum of land plus the building (Lönnqvist, 2015). According to Table 2 it is undeniable that property prices have raised in Tampere during the tramway projecting and implementation timeline. Instead, the reason for price rising could be debated.

While estimating the Turku situation it needs to consider the topical situation. The rate of interests is in a declining trend which is a good point in terms of property price rising and in terms of succeeding with the Turku's tramway project. In addition, Table 4 shows that the if the project will be executed, the estimated costs are going to be less than in Tampere. Of course, the more accurate cost calculation is under control and will be ready by the end of 2025 (Turunraitiotie, 2025). What could be debated is that Ukraine gets the peace the cost estimations will surely rise due to raw material price inflation. That will mean that Turku will need to take a bigger loan, and it might lead to increase the taxes of inhabitants. That tax increase could lead to unwanted migration. In the other hand, if the interest rates are coming down the tramway investment might be good. Even migration doesn't happen, if we assume that property prices rise but taxes rise also, a regular taxpayer gets to a situation where its property value increases but its taxable incomes increase also. In the end this is a mathematical problem which can be simplified and calculated after the more detailed cost estimations are ready.

According to Finnish citizens buying power that in the following years will be good for a regular taxpayer. The vanguard of labour unions has advised that salaries will rise 7,8% in the next 3 years. According to inflation predictions the inflation will be in 2025 1,9%, in 2026 1,6% and in 2027 1,7% in total 5,3% (compounded) (Suomenpankki, 2025). That could mean that the buying power will rise in Finland in the next years.

The next point of view is the actual global political situation. The tariffs are causing global tense and there is a big chance of starting an economical war globally. Economical wars frighten the investors, and the allocation of money becomes more cautious. While the world is in fear of sliding into a more protectionist trade the urbanization megatrend is still existing. If it is assumed that renters and home buyers are ready to pay higher prices for accessibility developing the city into a more accessible and modern entirety could allure investors and inhabitants to Turku.

After the whole priming, it is time to answer the last research question:

How much (if any) potential value Turku Tramway project can produce in terms of property price rise?

If the era/period of Turku tramway could be the same that the era/period was in Tampere, the data shows that there is an unavoidable opportunity to make the tramway investment, and it will surely produce value in terms of property price increases. Because the era/period is not the same, the comparison gets much more difficult. In terms of other values such as greenhouse gas emissions, people accessibility, modern city, and good urban design the tramway has the potential to provide value for those aspects. In terms of property prices there are so many uncertainty factors that are difficult to predict what will happen. If the worst-case scenario come true and the tramway project is decided to start but the projecting phase stretches, the costs of raw materials go terribly up, the uncertainty of investors grows recklessly, and the project is needed to discontinue it will inevitably produce more drawback than opportunities for Turku and for the prices of properties in Turku. How probable that scenario is? Improbable but possible. Instead in the best case scenario if the Finnish citizens buying power goes up, the economic situation in Finland gets stronger, the property funds manage to fix their balance sheet problem and the urbanizations megatrends continues it for sure mean that the factor that Turku has a strong well working modern public transportation it will lead to increased migration to Turku and the property prices will go up even more.

The reality is that the future is unpredictable, and the time will show if the worst-case scenario or the best-case scenario or something between them gets true. If anything, else that the worst-case scenario comes true according to previous data and theory, the tramway project will produce a moderate price increase into the properties of Turku.

7 Conclusions and future research areas

The target of the study was to analyse if the possible tramway of Turku could provide positive property value increase. The target is fully reached even the answer is not unambiguous. There are many factors that influence the property values like its presented in the second chapter. Also previously made research about Tampere's tramway project shows that there is difficult to conclude one valid number that shows exact answer because there are plenty of factors that influence. Instead, according to table 2 its unambiguous to conclude that in Tampere there have been positive impacts in property values due to tramway project. For finding out if the situation could parallel in Turku, there is critically evaluated in chapters 4, 5 and 6 the similarities and differences that might be reflected to Turku.

With the provided information it could be concluded that the Turku Tramway project could have a moderate price increase in terms of property price increase. There are many uncertainties, but considering all the pros and cons of the tramway project it might be concluded that the tramway project could have slightly more positive return than downside. Everything depends on the assumptions that are made but it seems that Turku's project might be slightly less costly than Tampere project. The overall urban development in Tampere has been better than in Turku for the last years so it could be concluded that the property value increase in Turku might be slightly less than in Tampere but still positive. The more topical cost estimation coming in the end of 2025 will be utilized by Turku to make the final decision. The conclusions of this study might also strengthen or weaken depending on the cost estimation. If the costs remain about the same, it could strengthen the property price rising and if the costs rise a lot, it might weaken the property prices.

There I want to summarize the answers for the research questions:

Questions:

1. According to previous research how much (if any) Tampere tramway project generated property price increase in its own tram project?
2. What are the key similarities and differences between fulfilled Tampere project and upcoming Turku project?
3. How much (if any) potential value Turku Tramway project can produce in terms of property price rise?

Answers briefly:

1. It is difficult to determine an exact figure, but research indicates that the Tampere tramway project significantly enhanced the city's overall attractiveness. Interestingly, some neighbourhoods not directly connected to the tramlines experienced even sharper price increases than those with direct access. While price growth along the tramlines may have been moderate, demand in those areas became more stable, suggesting lower volatility and improved risk-return balance. More comprehensive answer in 4.4 subchapter.
2. Turku and Tampere are similar in that they compete for the same migrating population, offer comparable services, and have similar population sizes. Both cities faced uncertainty during the decision-making phase of their tramway projects. However, Tampere has experienced slightly faster growth and currently has a more advanced public transport system. Differences in the tramway projects include Tampere having two separate lines compared to Turku's planned single line, higher estimated costs in Tampere, and more technically challenging ground conditions in Turku. More comprehensive answer in the subchapter 5.1.
3. If Turku's tramway project were launched under the same conditions as Tampere's, data suggests it would certainly generate property value increases. However, since the timing and context differ, predicting outcomes is more complex. The tramway has clear potential to add value through improved accessibility, reduced emissions, and better urban design. While property price impacts remain uncertain, a worst-case scenario—marked by economic strain and project delays—could cause significant setbacks. Though unlikely, this risk exists. On the other hand, in a favourable economic climate, the project could drive migration and boost property prices. Overall, unless the worst-case scenario unfolds, evidence suggests the tramway would bring at least moderate property value growth to Turku. More comprehensive answer in the chapter 6.

For future research if the tramway is decided to project and build into Turku, it could be very interesting to have a holistic and empirical data-oriented research where property prices of 2020-2025 are compared to the property prices during projecting phase and property prices of a ready tramway line in Turku. That kind of research could bring the numerical and actual reality if the tramway project of Turku really provided value in terms of property value increase or not.

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