



Examining the factors that affect housing affordability in London

Bachelor Thesis for Obtaining the Degree

Bachelor of Science

International Management

Submitted to Davis Gibbs. MSc

Beatrice Maier

61904127

Vienna, 23rd June 2023

Affidavit

I hereby affirm that this Bachelor's Thesis represents my own written work and that I have used no sources and aids other than those indicated. All passages quoted from publications or paraphrased from these sources are properly cited and attributed.

The thesis was not submitted in the same or in a substantially similar version, not even partially, to another examination board and was not published elsewhere.

23.06.2023

Date

Abstract

The purpose of this thesis is to examine the factors that play a role in the affordability of housing in London. The current crisis affects many people, particularly low-income households, and the younger generation, for whom it is increasingly difficult to find dwellings they can afford, and concerns have risen over the accessibility of housing. Given this challenge, the thesis aims to identify and analyse the determinants that have led to this situation. The literature review delves into this subject by focusing on identifying the various factors, which include the key economic drivers behind supply and demand and the government policies affecting the housing market. The thesis employs a quantitative research method and collects data extracted from secondary sources, such as from the London Government website. The trends that are examined in the statistical analysis are housing prices, travel time, income levels, inflation and interest rates, construction prices and building permits, and a regression analysis is conducted to identify the key determinants that contribute to the housing affordability crisis in London. The findings shed light on the intricate interactions between government policies, socio-economic factors, and market forces, which all contribute to the issue at hand. Although this is a highly complex situation with no straight-forward solution, the final section of the thesis focuses on possible government interventions that could help address the problem of housing affordability in the city and puts forward a set of recommendations.

Key words: housing affordability, residential location theory, social housing, policies

Table of Contents

Affidavit.....	2
Abstract.....	3
List of Figures	7
List of Tables	8
Introduction	10
1.1 Background and problem statement.....	10
1.2 Aim of the research	11
2 Literature review.....	14
2.1 Residential location theory.....	14
2.2 Fundamentals of real estate economics.....	19
2.3 The importance of housing and housing affordability	21
2.4 Housing costs in London.....	22
2.5 The influence of policy and policy failure.....	23
2.5.1 Land use and planning restrictions	24
2.5.2 The right-to-buy scheme	27
2.5.3 The shared ownership scheme	28
2.5.4 The help-to-buy scheme	28
2.5.5 The help-to-build equity loan.....	29

2.5.6	Council or social housing.....	29
2.5.7	The problem of 'void' or 'dormant' properties.....	31
2.6	Household income.....	33
2.7	Inflation and interest rates.....	33
2.8	The current crisis	35
3	Methodology.....	36
3.1	Research approach and method	36
3.1.1	Locational analysis.....	37
3.1.2	London boroughs	38
3.1.3	Time series analysis.....	39
3.2	Model and data	40
3.2.1	Locational analysis.....	40
3.2.2	Time series analysis.....	42
3.2.3	Methodological limitations	43
4	Analysis and results.....	44
4.1.1	Locational analysis.....	44
4.1.2	Time series analysis.....	47
4.2	Summary of the results	51
4.3	Limitations of the analysis	53
5	Discussion.....	56
5.1	Facilitating access to affordable housing in a spatial context	57

5.1.1	Lowering the cost of commuting	57
5.1.2	Facilitating teleworking	58
5.1.3	Better integrating residential and commercial areas, peri-urban hubs	59
5.2	Increasing the supply and reducing the cost of housing	59
5.2.1	Increasing the supply of land / building permits.....	59
5.2.2	Incentivising new housing constructions	60
5.2.3	Reducing inflation and interest rates and thereby building costs	61
5.2.4	Taxing empty dwellings or land banks	62
5.2.5	A new approach to building houses: The New European Bauhaus	64
5.3	Learning from Vienna	66
6	Conclusion.....	74
6.1	Concluding statement	74
6.2	Limitations of the study and ideas for further research.....	76
6.3	Recommendations.....	77
	Bibliography	80
	Appendix	98
	Appendix 1: locational analysis data across London boroughs	98
	Appendix 2: time series analysis data.....	100

List of Figures

Figure 1: The Hoyt model. Source: Planning Tank	17
Figure 2: Median House Price, 1996-2015. Source: DCLG, Land Registry, Average House Prices, 1996-2015	23
Figure 3: Number of permanent dwellings started and completed annually from 1946 to 2020 in the UK. Source: Institute of Health Equities	30
Figure 4: Regional split of empty properties in 2022. Source: Financial Times Adviser	31
Figure 5: London Boroughs. Source: data extracted from londoncouncils.gov.uk.....	39
Figure 6: Scatterplot of average house prices and median household income. Created by the author on Jamovi.	44
Figure 7: Scatterplot of average house prices and travel time to Central London. Created by the author on Jamovi.....	46

List of Tables

Table 1: Results of the linear regression (locational) analysis	47
Table 2: Results of the linear regression (time series) analysis	48
Table 3: Results of the linear regression (time series) analysis	49
Table 4: Results of the linear regression (time series) analysis	50
Table 5: Submarkets of the London housing market	54
Table 6: Data for the locational analysis across London boroughs	99
Table 7: Data for the time series analysis	101

Abbreviations

CBD: Central Business District.....	16
HBF: Home Builders Federation.....	25
NEB: New European Bauhaus	64

Introduction

1.1 Background and problem statement

London currently finds itself in a housing crisis and many young people are unable to get on the “property ladder” or rent adequate housing. There is widespread concern that the young generation will face a decline in their living situation compared with previous generations, or that they will have to spend such a high proportion of their income on housing that there will be less left for other expenses, and that this will lead to a decline in the living standard.

There are two main issues that characterise this crisis. These are the undersupply in the housing market and a decrease in affordability (Snelling, Colebrook & Murphy, 2016). A study conducted by the Heriot-Watt University found that, in order to meet the demand of housing in England and hence overcome the housing shortage, around 340,000 homes must be built every year by the year 2031 (Bulman, 2018). Newly built affordable housing rose just under 1% in the UK in 2020 and was still 90,000 short of what is needed (Booth, 2020).

While a decade ago it was mainly younger people who were worried about the unaffordability of housing, the problem has spread and now affects the lower income sections of society in a broader sense. This also includes those who are already homeowners, but who find it impossible to upscale under the current conditions (Gilma Delgadillo, 2021). An increasing number of young individuals are unable to afford rent or housing and find themselves living with their parents (Shelter & KPMG, 2014).

This situation creates not only a burden on the individuals concerned, but also a risk for society in that it could lead to an ever-increasing group of people who feel excluded from the property market or who are locked into the status quo and do not see any perspective of improvement. Young people could become demotivated and dissatisfied with the political system, believing that it safeguards the interests of the property owners while closing the doors to the “lost generation”, which has just suffered through the COVID pandemic.

It is therefore important to understand why housing is becoming increasingly unaffordable, how this affects young people and low-income households, and what can be done to improve the situation.

1.2 Aim of the research

This thesis will focus on the factors that play a role in the demand and supply of housing in England, and the driving forces behind them. It will also look at how the affordability (or unaffordability of housing) influences the choices different income groups of society make when they decide where they buy or rent property. This should give us a better understanding of what are the coping strategies of the weaker income sections of society, including the young, in the face of ever-increasing house prices. Finally, the thesis will examine the role of government policies and possibilities for making housing more affordable.

While the housing market has become less accessible all over the country, there are significant differences in house prices across different regions. Many low or moderate wage earners have been squeezed out of the bigger cities and moved to the surroundings where they can still find affordable housing. In doing so, they accept longer commuting distances. It is one of the hypotheses of this thesis that the location

where they look for housing plays a key role in the coping strategies of the lower income segments of society.

Apart from the cost of housing, the availability of public transport and the time and cost of travel to work are major factors that influence the choice of location. The thesis aims to look at these factors and understand how they impact on those who are struggling to find affordable housing. The approach chosen in the thesis is to go beyond the macro-level factors that determine the evolution of the housing market and look at the property market in a spatial context.

The thesis will also be looking into the role that the government has played through land use and other laws that were introduced, and how these laws and regulations may have played a role in the undersupply and soaring prices of housing.

In particular, the following research questions will be addressed in the thesis:

- *How does the spatial location of the different boroughs in London and their distance from the city centre influence housing prices and thereby the affordability of housing?*
- *What are the main supply and demand factors that have affected the evolution of house prices in London over time?*
- *What government interventions could help mitigate the housing crisis and make housing in London more affordable?*

The literature review (second section) will focus on the theoretical aspects of the housing market by discussing some of the most important factors for determining housing supply and demand. Location-based models will be reviewed in order to get a better understanding of the spatial element of the property market.

The third and the fourth section of the thesis will build on the theory and research discussed in the literature review to develop the methodology and carry out the analysis. A two-pronged approach will be followed. The first strand of the analysis will focus on the spatial aspect of the housing market. A case study will be developed to analyse the link between the cost of housing, the income situation of households and the area where they take up residence. The case study will focus on the London area.

The second strand will follow a time series approach and try to quantify the impact on house prices of some of the major supply and demand factors identified in the literature review.

The insights gained from the analysis will then be used in the fifth section (discussion of the results and conclusions), to look at possibilities for alleviating the situation and put forward considerations and recommendations as to what could be done to stem the growing divide between those who are established on the property market and those who feel priced out of it. That part will also address how recent trends in sustainable mobility, digitalisation and teleworking, new ways of building, as well as developments regarding the use of renewable energies and energy efficiency, could make housing potentially more affordable. In this context, the thesis will also make reference to the New European Bauhaus, a movement that aims to combine sustainability, aesthetics, and inclusiveness in an integrated approach to housing (European Commission, 2021). Finally, a comparison will be drawn with the city of Vienna and how and the affordability crisis is dealt with there. The thesis concludes with a set of policy recommendations and some ideas for further research.

2 Literature review

2.1 Residential location theory

Location theory is a branch of economics that is often used to analyse what determines the level and type of investment in a particular region (McCann, 2013). In its simplest version, it tries to explain how firms make decisions about where to locate as a function of the costs of transporting the inputs needed for production, from the place where they originate to the firm. Firms generally try to minimise the distances, but the unit transportation costs of the inputs play a crucial role. More elaborate versions of the model allow to take additional factors into account.

These models can be used to analyse, for instance, how the optimal location of the firm changes if a new and cheaper mode of transport comes along, or the relative price of an input changes. For instance, if a paper mill uses wood and recycled paper as inputs and households get increasingly better at paper recycling, then recycled paper will become cheaper as an input and one would expect that the firm adjusts its input mix and uses more recycled paper in production relative to wood. If a new factory is built, it may not be in a forest area as was traditionally the case, but closer to major conurbations where larger amounts of recycled paper are available (Burelli, Haskamp, Leiler and Maier, 2022).

A similar reasoning can be applied to the housing market. A buyer of a house will not only look at the price of the house, but also at a number of other factors that are linked to the location of the property.

The residential location theory reflects this situation. Real estate stems from the Latin 'immobilis', which means immovable. The very essence of being 'immovable' plays a

role in the decision making of households when they determine how much to pay for a property. When a property is being purchased the 'location' is also being bought, because households are willing to pay a higher price when the location allows them to reduce other variables that consume money and time (e.g., commuting to work). This trade-off is reflected in Muth's (1969) seminal access-space model, which suggests that the further away a house is from the city, the lower is its equilibrium price.

Evans (1973) describes the two situations many households find themselves in to minimise costs. For some, proximity to their place of work is important and hence they will locate closer to their workplace, paying less for commuting but accepting higher housing costs. Those for whom proximity is less of an issue will locate further away (i.e., the periphery of the city) to benefit from cheaper accommodation, while having higher transportation costs.

Evans exemplifies this using a real-life example from London in 1967. In his case study, the distance from the periphery of London to the city centre was around twelve miles and this would take approximately forty minutes with the underground with a cost of 17.5 pence. Over the course of a week this would amount to £1.75 for seven hours of travel. However, the amount saved on housing would also be high. Renting a two-bedroom apartment on the periphery would cost around £5,000, whereas in the centre it would be upwards of £15,000. The individual therefore had to make a trade-off between living on the periphery or in the city centre, based on his/her total cost for travelling and rent.

A study carried by Hassan et al. (2016) used a Location Housing Affordability Index to show that location plays a role in housing affordability. Transportation expenditure is

the amount paid by each household on their daily commuting (Hassen et al., 2021). This amount ultimately depends on where the household decides to locate. Hence, location affordability and a household's mobility choices are linked (Greenlee et al., 2016).

The size of the city plays a role in location theory. This was already discussed by the creator of location theory, Robert Haig. In a smaller city households need to pay less attention to transportation costs. Location theory is therefore more suitable for larger cities (Haig, 1926).

Another locational theory that is of importance to this thesis is sector theory. Hoyt, who developed this model in 1939, suggests that different sectors of a city have different income levels and people will choose a sector to live in based on their income level. In an empirical study of 34 cities in America, Hoyt found that sectors were segregated into different rent levels, regardless of their concentric levels. His model suggests that 'like attracts like', so high-class sectors will remain high-class and attract those with high incomes, and lower-class sectors will attract lower-income households. The theory also discusses how amenities play a role as a deciding factor for residency. For example, high-class sectors tend to be associated with higher safety.

The model consists of five major zones. As seen in *Figure 1*, the first zone is the central business district (CBD) which is where most of the activities occur. Most of the shops, banks and offices lie in this centre. It is the heart of commercial amenities and has the highest level of activity. This results in fewer residents living in the CBD. Those who are looking for peace, cheaper and spacious housing, will seek housing somewhere further away.

The second zone consists of the zone of transition, which attracts the low-income households and is mainly where factories are based.

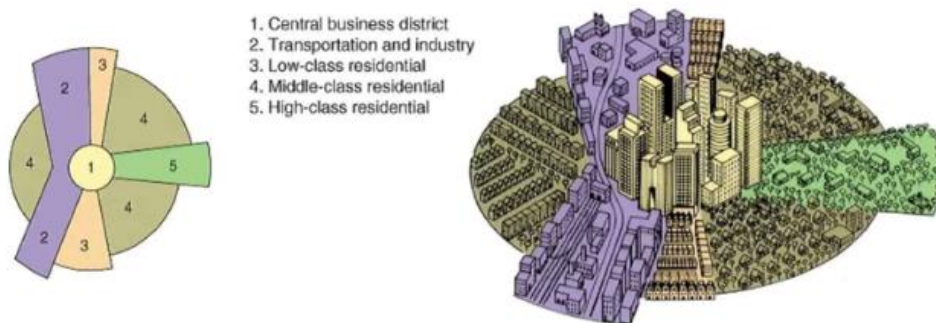


Figure 1: The Hoyt model. Source: Planning Tank

The third sector is the working-class residential area. Housing in this area is cheap because of its proximity to the factories and the living conditions tend to be less good - more pollution and closer to railroads. Those who tend to settle in this zone seek to reduce their transportation costs.

The fourth and largest residential zone, which is located further away from the industrial area and factories, is the middle-class zone. Those who tend to locate in this sector commute more easily to the central business district.

The final sector is the high-class sector, which has important amenities associated with cleanliness, higher safety, and quietness.

One of the limitations of this model is that it is somewhat outdated - it does not factor in modern means of transportation that make it easier for people to travel from lower-cost sectors further away to the central city. Another limitation of this model is that it

doesn't take into account the notion of 'edge cities'. These are located in prior rural areas and are 'cities' that have a concentration of offices and shops. In a more modern setting, the CBD is not the only place that offers a wide range of activities in metropolitan areas.

A recent empirical study of the London housing market using locational theory is given in Petris et al. (2022). The authors use the ripple effect that occurs when people who are priced out of the prime locations look for an alternative in less expensive boroughs, to explain the price dynamics in the London housing market. The ripple effect starts in the most built-up areas in the city centre where new construction is not possible anymore and works its way to the periphery. One of the findings is that this spatial displacement in demand has caused above-average price rises in the relatively affordable East London boroughs, which are considered a good second-best choice for wage earners for whom the central boroughs have become too expensive (Petris et al., 2022).

The study also finds long-run interconnectivity in price developments mainly in four borough groups. The first one comprises the prime Central London areas, where demand comes from the upper household income classes (Petris et al., 2022). A second group is made up by the London areas that circle the inner boroughs on the outside. Housing demand that fails to be satisfied in Central London has a knock-on effect on the surrounding boroughs. The lower income outer boroughs form a third interconnected group, whereas the fast-growing 'Olympic' boroughs in the east, which are still London's most affordable ones, make up the fourth cluster of areas with similar house price movements (Petris et al., 2022). These results are very much in line with locational theory and the Hoyt model.

2.2 Fundamentals of real estate economics

Real estate is defined as a stable good, meaning that property is durable and the land on which the property resides has no expiration date. Real estate comprises land, legal rights, and property (Pirounakis, 2013). The property is priced and placed for sale in the market and the price is dependent on both the supply of and demand for the good.

In order to understand real estate economics and its connections to other economic sectors, it is important to grasp how the supply and demand dynamics drive price changes in the housing market and how exogenous variables affect this process. Another important factor is the role that government finances play in this field (Pirounakis, 2013).

Since real estate is defined as a durable good, it is related to the stock-flow model, meaning that the total number of houses (stock) in an area increases over time with new construction (flow) (Snelling, Colebrook & Murphy, 2016). Since it takes time to construct new property, the supply of housing is inelastic in the short-term (Harman, 2012).

Real estate economics can be approached at two levels: the microeconomic level and the macroeconomic level. The microeconomic level specifically centres on the property's surroundings, focusing on its heterogenous features, which distinguishes housing from other goods (Snelling, Colebrook & Murphy, 2016). The main determinants of housing prices at the microeconomic level are the locational and the structural properties of the housing object. These differ from one object to another (Pirounakis, 2013).

‘Structural’ here refers to the physical state of the housing property (i.e., its size or the state it is in) and ‘locational’ means all factors which are related to the geographic location (Snelling, Colebrook & Murphy, 2016). The heterogenous quality of the housing object makes pricing decisions more difficult (Pirounakis, 2013).

The macroeconomic level focuses on aggregated supply and demand in which the price of the property changes in accordance with underlying factors. This thesis will address the microeconomic level in the context of a spatial analysis, but it will also be looking at macroeconomic drivers, such as interest rates and inflation rates.

Real estate economics and real estate have many connections to other economic sectors (Chetan et al. 2021). Such other sectors include infrastructure or the financial sector, as was dramatically demonstrated in the financial crisis in 2007, in which the housing market declined in a global crisis affecting financial institutions, housing companies, and owners.

There are two types of real estate in the market: commercial real estate and residential real estate. The commercial real estate market refers to property that can be used ‘commercially’, i.e., for business purposes (Forbes, 2021), such as office buildings or hotels. Residential real estate, on the other hand, is any property that is used as residential dwelling or apartment. In this thesis, the term housing market refers to residential real estate.

Housing tenure arises from people making a choice between either owning their own dwelling or renting a property. There are two types of tenure in England: freehold tenure and leasehold tenure. Freehold tenure is when the household owns the property. Leasehold differs in that the owner only has the right to own the property

for a certain time-period before the lease ends, and the time length of the lease can vary.

2.3 The importance of housing and housing affordability

Housing affordability refers to households either renting or purchasing housing and thus becoming a tenant or owner of the property (Kholodilin, 2022). For many households, except the richest, choosing to spend a certain part of their income on housing has an important opportunity cost in terms of not being able to spend that money on other goods or services. The percentage of the household income that goes into housing can be seen as a measure of housing affordability. The higher that percentage, the less affordable housing becomes for a particular income group. Young people and low-income households typically spend a higher proportion of their income on housing than more affluent parts of society.

Uwaegbulam (2022) points to the importance of the government in providing affordable housing opportunities for everyone. Osborn (2016) remarks that it is the responsibility of the government to provide housing at more affordable terms than the market, to allow everyone the opportunity to have a roof over their head and spend the excess money (that would otherwise be spent on expensive housing) on other essentials they need.

Another way of looking at the issue is by considering real estate as a valuable asset which may also be passed down the family (Hamnett et al., 1991). Housing represents the wealth of many households (Kholodilin, 2022) and for many, owning property also provides a sense of security (Forrest et al., 1990). In recent years, residential property has increasingly also become an object of investment for the purpose of generating a stream of income for the owner, who does not inhabit it him/herself, but rents it out.

Treating housing as an asset or investment object can lead to properties being left empty for certain periods of time, which then reduces the supply and pushes prices up (see next section).

Homeownership was boosted in the early 1980s, which was rooted in an attempt by politicians to expand middle class lifestyles (Forrest, 2011). Initially, homeownership was more prevalent among those with a higher social status. Then, government initiatives were launched to support lower-income and more vulnerable groups to accede to homeownership or help them set up shared ownership (Forrest, 2011).

Housing today is expensive and exceeds the savings of many people. Borrowing is one solution in purchasing a dwelling. However, borrowing during times in which housing booms and busts alternate can be risky, especially if there is a strong decline in price immediately after the purchase of the home, as those with high mortgage debt and lower or unstable incomes risk losing their dwelling again (Snelling, Colebrook & Murphy 2016). With the sharp increase in the interest rate we are currently seeing, this could become an issue again.

At a sectoral or macro level, households' inability to pay back the loans taken out from banks for housing can cause severe damage to the economy and trigger a crisis in the banking system (Snelling, Colebrook & Murphy, 2016). This was exemplified in the 2008 crisis, when 'bad' mortgages burst the housing bubble, leading to a widespread financial and economic crisis.

2.4 Housing costs in London

Figure 2 illustrates how housing prices in London have developed since 1996 – an increase by a factor of four to six depending on the area. The figure also illustrates

how the average housing price for England differs from that for London, England's median house price having increased at a much slower pace.

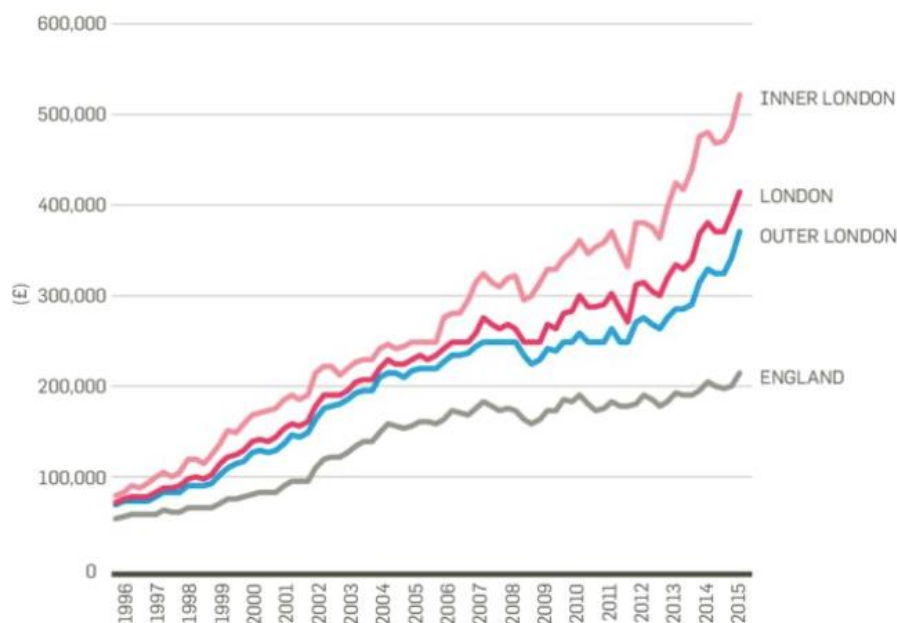


Figure 2: Median House Price, 1996-2015. Source: DCLG, Land Registry, Average House Prices, 1996-2015

According to Petris et al. (2022), London house prices increased by nearly 600% in nominal terms between 1995 and 2016, and households now spend approximately two-thirds of their mean take-home salary on mortgage payments, causing serious housing affordability constraints.

2.5 The influence of policy and policy failure

Many government policies impact directly or indirectly on the housing market. This literature review focuses on seven of them: land use and planning restrictions, which constrain the supply of housing; the right-to-buy scheme under the Thatcher

government, which turned tenants into owners; the help-to-buy scheme, which eases access to housing for people on a limited budget; the shared ownership scheme, which makes it possible to buy only part of a home and continue to pay rent on the other part; the help-to-build equity loan, which provides government loans on favourable terms for building new homes or converting commercial buildings to residential ones; council or social housing, which is an important sub-category of affordable housing; and the existence of 'void' or 'dormant' properties, which reduce the effective supply of housing.

2.5.1 Land use and planning restrictions

Kate Barker (2016), an economist who worked with the Bank of England, emphasizes the crucial role that the housing shortage plays in the housing affordability crisis. An important factor that contributes to the undersupply of housing in England is the availability of land and the land use planning system. Land use planning plays a key role for the housing market because it determines the availability of land that can be built on. The planning system has to balance the needs of the housing market with considerations linked to nature conservation, landscape or the preservation of agricultural land. While those, who want to make housing affordable favour less restrictive planning rules, nature conservation groups and, more recently, climate change advocates, or residents of leafy, spacious, and undisturbed residential neighbourhoods who want to keep it this way, can create powerful oppositions who prioritise protecting the environment over housing developments.

Before the Town and Country Planning Act 1947 was made, it was relatively easy to secure a piece of land and build on it (Delgadillo, 2021). Although, according to Barker (2004), the planning law was initially intended to help with supplying land, it has

instead become restrictive. The Planning Act has been modified over the years and the changes have further limited the use of land. According to Whitehead (2007), the natural lack of supply of land in England due to the high population density in large parts of the country, and the boundaries imposed by the Planning Act on the mobilisation of building land, have limited the supply of housing and led to higher house prices.

This conclusion is supported by numerous studies. Harter-Dreiman (2004) found that regulations on the usage of land decrease the housing supply price elasticity. Quigley & Rosenthal (2005) also argue that excessive restrictions on land use play a role in the insufficiency of housing supply. Research carried out by Hilber and Vermeulen (2014), in which they used data and mathematical models, concluded that regulations had the largest impact on house prices in England. They found that constraints and regulations added £102,000 to the average price of a house.

According to the Home Builders Federation (HBF), the supply of housing has fallen to its lowest level since World War II, which is the result of government regulations (Stacey, 2023). The study carried out by the HBF indicates that less than half of the government's housing target has been realised to date. This is due to the overly strict enforcement of regulations (Stacey, 2023). However, the Department for Levelling Up, Housing and Communities argue that they have accomplished their annual target of 300,000 newly built homes (Bet, 2022).

One important factor shaping the planning system is whether planning policies are under the control of economists or planners (Evans, 2004). The economic justification for intervention in the land use system is to maximise social welfare where the market fails to achieve this by itself. In practice, however, the planning system is determined

by political choices that reflect electoral influences (Evans, 2004). The intervention which does occur may not be in line with welfare maximization and economists can then only point out the costs of the policies pursued (Evans, 2004) and analyse what would happen if they were changed.

Among those who argue that weakening regulations could play a role in solving the housing crisis are Hilber and Vermeulen (2014), who estimated a 35% decrease in house price if there were fewer regulations. They suggest that relaxing regulations would allow the housing market to meet demand, and hence house prices would be lower. However, one criticism of this argument is that “anti-planners” concentrate solely on regulations and the number of houses available, but do not mention housing quality (Boughaba, 2018).

Advocates of the anti-planning argument also criticise that no action is taken against *nimbyism*. This term stands for ‘not in my back yard’ and refers to people, often of a certain demographic, age and income group, that oppose any development in their local areas (Delgado, 2021). Furthermore, NIMBYS have an advantage in that they were able to purchase their property at a time when prices were still low (Delgado, 2021).

However, despite the law of supply and demand predicting that an increase in supply of houses will decrease the price, some argue that this is not the case. In Nall et al’s (2022) paper, the authors touch upon a survey of urban and suburban residents in the United States, which shows that around 30% to 40% of Americans believe that an increase in the supply of housing would also increase the costs of housing. This is contrary to the logic of supply and demand and might be due to an un-reflected interpretation of price-quantity data.

It raises an interesting question, however, in the sense that bottlenecks in the supply of building materials or a shortage of construction labour would indeed raise the cost of new houses and make them less affordable. A distinction therefore needs to be made between movements along the supply curve (the marginal cost of construction increases as more houses are built) and outward shifts in the supply curve if building land, which is a fixed factor in construction, becomes available in larger quantities and more cheaply. The latter would be the case if land use planning restrictions were relaxed, and it would lead to lower house prices.

2.5.2 The right-to-buy scheme

The right-to-buy scheme came into existence under Margaret Thatcher in the 1980s. It allowed local authorities to buy a home at a discounted rate. Under this Act, a recorded 1.8 million properties were purchased in 1980 and 1981 (Cole et al., 2015). Minton (2022) puts the number of council homes that were sold under the conservative government in the 1980s at around 1 million.

Under the current terms, the right-to-buy scheme offers a 35% discount off the market price of council houses for tenants who have been public sector tenants for between 3 and 5 years, with the discount increasing by one percentage point with every extra year of tenancy up to a maximum of 70% or £127,940 (whichever is lower) in London boroughs (UK Government, 2023). For council flats, the right-to-buy scheme starts with a 50% discount for people who have been public sector tenants for between 3 and 5 years and goes up by 2% for each additional tenancy year, up to the same upper limits as for houses.

2.5.3 The shared ownership scheme

The shared ownership scheme offers tenants the opportunity to buy a share of the home (between 10% and 75% of the home's market value) and pay rent to the landlord on the remaining part if they cannot afford the full deposit and mortgage payments to purchase the home completely (UK government, 2023). The scheme applies to existing properties and new constructions and is not limited to council housing but also covers housing associations and other organisations.

2.5.4 The help-to-buy scheme

In 2013, following the economic crisis, the Government came up with an initiative called the 'help-to-buy' scheme, with the intention of allowing people to buy their first property that they would otherwise struggle to purchase. Five percent of the price of a housing property must be deposited by the buyer, and a mortgage loan which ranges from 5% to 40% of the total is given out by the government, with the aim of ensuring that the buyer is able to purchase their first home (Collinson, 2022). By having this equity loan scheme, the government aims to also boost housing supply by increasing the demand with the help of this scheme.

The right-to-buy scheme, the shared ownership scheme and the help-to-buy scheme are examples of government policies that favour young people and low-income families, and that have made housing more affordable for them. However, these schemes have been criticised by many as contributing to increased prices (Hilber, 2015), given the inelastic housing supply elasticity.

2.5.5 The help-to-build equity loan

Since 2022, the UK government also offers a loan to individuals who want to build a home. This equity loan, which covers part of the costs, can be used for financing the purchase of land and for building the home on it, for converting a commercial property into a residential property, for building a new flat in an unused space above an existing building ('airspace development'), or for demolishing an existing property and replacing it with a new home (UK government, 2023b). For building projects in London, the loan can amount to between 5% and 40% of the estimated land and building costs, up to a limit of £600,000 (including the land purchase). If the land is already owned, the limit is £400,000.

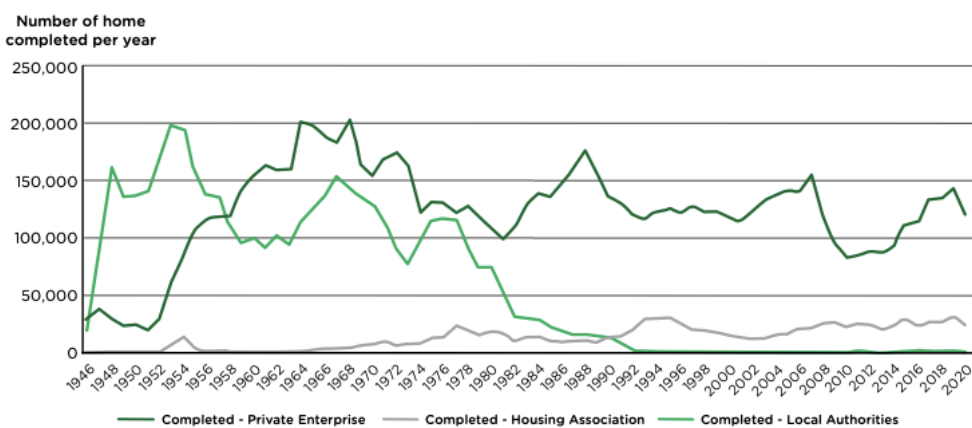
The loan is interest-free for the first five years. In the sixth year, an interest of 1.75% is charged, which is increased in successive year in line with the consumer price index (UK government, 2023b). The support can only be used for building one home. Applicants must be able to show that they also have a mortgage offer from a bank for the home they want to build (UK government, 2023b).

2.5.6 Council or social housing

Blainey (2021) distinguishes between two sub-categories of affordable housing, affordable social and affordable market. Affordable social housing is housing that has been designed and built for renting it to the council, which then allocates it to home-seekers.

Not as many social houses are being built today as were built in the post-war era (Addison, 2022). Social housing achieved its peak in the early 1950s, with around 200,000 social houses built in England every year (*Figure 3*). This support for lower

income households was thought to be vital for peoples' 'health and wellbeing' (Addison, 2022). Despite the country having high public debt after the war, the focus was building high quality houses for social rent. Social housing construction continued at a high level with over 100,000 dwellings completed per year for almost thirty years. In the 1970s, in London alone around 20,000 new houses were being built a year.



Source: ONS

Figure 3: Number of permanent dwellings started and completed annually from 1946 to 2020 in the UK. Source: Institute of Health Equities

Social housing witnessed a steep decline in the 1980s when, as a result to the right-to-buy scheme, around one in five council tenants were able to purchase their own council homes at a discount rate (Addison, 2022). This marked a fundamental change in policy, as the historical recognition of social housing as being of importance and a priority for public health, was replaced by an attempt to expand homeownership also to the lower income segments of society. In April 2022, only 916 new social houses were built in London (Addison, 2022). The decline in the building of social housing since the 1980s can be clearly seen in *Figure 3*.

2.5.7 The problem of ‘void’ or ‘dormant’ properties

In 2016, it was reported that around 200,000 homes were empty in England (Inman, 2017). This has now increased to over 676,000 homes lying dormant in England (Hincliffe, 2023), with around 90 000 of them being in London (see *Figure 4*).

Region	Current number of empty properties (% increase/decrease from 2021 in brackets)
North West	101,778 (+1.3%)
South East	99,829 (+3.8%)
London	89,508 (+2.0%)
Yorkshire/Humber	75,283 (+3.2%)
West Midlands	72,048 (+4.2%)
East	69,990 (+5.6%)
South West	66,839 (+7.8%)
East Midlands	59,581 (+4.0%)
North East	41,596 (+1.7%)
Total for England	676,452 (+3.6%)

Figure 4: Regional split of empty properties in 2022. Source: Financial Times Adviser

The wealthiest regions in London, such as Chelsea and Kensington, reportedly have one of the highest rates of empty houses (Inman, 2017). This is due to wealthy owners immersing themselves in the buy-to-leave game, in which they purchase property in the wealthiest areas in England and leave it empty, regarding it as an investment that increases in value (Evening Standard, 2014). The theory of housing financialization is used to explain this phenomenon of purchasing for financial reasons rather than somewhere to live in, and this is more prevalent in larger cities, such as London

(Bourne, 2019). It is therefore important to distinguish between housing services and housing assets (Clare, 2020). The demand for housing services can be described as the demand that is driven by people looking for somewhere to live. The demand for housing assets is driven by decisions to invest and retain assets for the purpose of receiving a larger return in the future.

Another reason many homes remain empty in England is because owners or landlords are unable to raise the funds or receive the permissions that are required to redevelop their property (Capacitygrid, n.d.). Other reasons as to why properties in England are empty, are more temporary and linked to the functioning of the market. Among these are property refurbishments, or simply waiting until a new owner or tenant is found.

These 'void' properties play a role in the inefficiency of the housing market in England and as stated by the Head of Policy Campaigns at PropertyMark, Timothy Douglas, they are a "wasted resource", especially during a time in which the country is experiencing a low supply of housing (Stella Lange, 2022). Using these empty houses more efficiently, could play a role in alleviating the housing crisis (Hinchliffe, 2023).

It is not only houses that are treated as an asset, but also the land before the houses are actually being built. According to Muellbauer (2018), UK developers are also land speculators who hope to buy land at low prices and later sell it on at a higher price, sometimes having added a house to it. An important part of the benefit is the value increase in the land once planning permission has been received. This is different, for instance, in Germany, where the 'planning gain' largely accrues to local authorities. As a result, the incentive to hold on to land banks is much smaller in Germany than in the UK. Muellbauer (2018) reports that in 2014, 86% of planning permissions were

actually realised in Germany, whereas in the UK the build-out rate after planning permission was only 48% in the same year.

2.6 Household income

Income plays a central role in establishing the demand for houses. Studies suggest that the income elasticity of demand for housing is in the region of one (Muellbauer, 2018). That is, a one percent increase in income tends to increase the demand for housing by one percent. The more money someone earns, the higher the price they are willing to pay for a property. If income increases steadily over a longer-period of time, then it can be expected that the house price that is considered affordable will also increase (Meen, 2019).

However, general trends can conceal important differences between income groups. Income inequality plays a key role for the affordability of housing: low-income households will find themselves struggling not only with access to housing, but also with housing quality and location issues. This is exemplified by the Hoyt model (see Section 2.1): those who are unable to afford housing or maintain the quality of their current ones, because of their financial status, are likely to move to neighborhoods that provide a better match regarding their financial situation.

2.7 Inflation and interest rates

Interest rates constitute another key macro-economic factor that plays a role in determining real house prices (Muellbauer, 2018). Interest rates have been very low for many years as central banks have tried to help overcome the various external shocks (financial crisis, COVID, war in Ukraine) by supplying cheap money to the economy. When interest rates are low, then investors have little incentive to put their

savings into banks or government bonds and will be looking for more attractive investments, including real estate. At the same time, lower interest rates mean cheaper mortgages, which allows more people to take out mortgages for the purchase of homes. There is therefore increased demand for houses from savers who are looking for investment opportunities, as well as from people who now see an opportunity to become a homeowner or to upgrade to a bigger or better-quality home.

Low interest rates also reduce the costs for builders, but if supply is mainly constrained by other factors, such as restrictive land planning, then demand will outpace supply and push house prices up. Conversely, when interest rates go up and mortgages become more expensive or banks become more reluctant to lend, for instance, during a financial crisis, then one would expect the opposite to happen. Evidence for this is provided by Muellbauer (2018), who shows that the credit crunch in the early 1990s and then again in 2008/09 interrupted the upward trend in real house prices in the UK and led to several years of price decline. The current increase in the interest rate could also have a dampening effect on house prices.

Inflation is another macro-economic variable that influences house prices. Inflation is defined as the process where money loses purchasing power (Porter 2023). Inflation is measured by looking at how the price of a basket of goods that people habitually consume, changes over time (Salwati and Wessel, 2021). So, inflation measures the change in the overall price level in the economy. One would therefore expect that house prices move in line with the inflation rate. However, the inflation rate is a weighted average of price changes, and it can be that house prices increase faster than the average. For instance, if inflation affects the construction sector more strongly than other sectors of the economy, then the costs of building new homes will

go up by more than the overall inflation rate. According to Simic (n.d.), construction prices have been particularly affected since the start of the COVID pandemic and the impact of the price increases is being felt to this day. Data from the Bureau of Labor Statistics show that the prices of building materials have increased 20% year-over-year (Simic, n.d). Given that incomes have increased by much less except for the highest income earners, inflation has therefore accentuated the housing affordability crisis.

2.8 The current crisis

There are indications that we are currently entering a period in which some of trends discussed above could be about to change. The dramatic rise in energy prices in the wake of the Ukraine war has spilled over into food and other goods and has led a cost-of-living crisis, which in turn has decreased the demand for housing (Patel, 2022). At the same time, central banks all over the western world are being forced to raise interest rates to curb inflation. As mentioned above, higher interest rates raise the cost of mortgages, which will further decrease the demand for housing. It is hard to tell whether this will stop the upward trend in house prices, or even lead to a downturn in the housing market, but there are signs that house prices are stabilizing, including in the London market, with Savills (2023) reporting house prices in London at the same level in early 2023 as a year earlier.

These trends also have a knock-on effect on the rental market. While higher interest rates push up mortgage costs and slow down the demand for house purchases, the same is not true for the rental market. On the contrary, people for whom homeownership is now moving out of reach, will turn to the rental market. This can already be observed, with demand for rental properties in London increasing sharply.

This in turn strengthens the position of landlords and some are now asking higher income ratios of prospective tenants (Barnes, 2023). The effect is a decrease in affordability of rental property for the weaker income groups.

Given that house prices have increased at unprecedented rates over the last decades and have reached historical peaks (Muellbauer, 2018), one may wonder if house prices are not over-inflated and there is a risk that the bubble could burst. Petris et al. (2022) have looked at this question for the London residential market, but they detected bubbles in only three out of the 32 London boroughs (Barking and Dagenham, Bexley and Newham). These are all located in proximity to the Olympic village and major business districts such as City and Canary Wharf, whereas no bubble condition was found in the inner London boroughs with the highest housing prices (Petris et al., 2022).

3 Methodology

This section contains the methodological part of the thesis and is structured into two parts: research approach and method, and model and data. It also describes certain limitations of the methodology.

3.1 Research approach and method

An important step in this work on the thesis was to choose a research design and research method that was fitting in order to successfully collect and analyse the data. The data used in the thesis is secondary data. There are three existing research approaches: qualitative, quantitative, and mixed methods (Creswell, 2014). The aim of the qualitative research approach is to focus on individual meaning, with the aim

of understanding concepts and perceptions more thoroughly (Creswell, 2014). In-depth interviews using open-ended questions are used by the researcher to gain a deeper understanding and insight and the researcher's interpretations are used for the data collected. Grounded theory, ethnography, case studies, narrative research, and phenomenological research are all possible types of procedures of the qualitative approach (Creswell, 2014).

The quantitative approach uses numerical data to test objective theories or opinions of a proportion of the population and the two types of this approach are surveys and experiments (Creswell, 2014). Mixed methods includes both the qualitative and quantitative approach (Creswell, 2014) with the goal of attaining a complete picture by verifying the validity and filling in any gaps of the other form of database.

For this thesis, the quantitative method was chosen as it uses statistical analysis to measure the relationship of defined variables (Creswell, 2014). Research approaches must include three elements, the research design, the research method, and the philosophical worldview (Creswell, 2014). Post-positivism is most commonly used for the quantitative approach and is the worldview that is also used in this thesis. This worldview is centered around the idea of cause-and-effect and uses observation through numerical analysis to enhance our knowledge on a specific topic (Creswell, 2014). The quantitative approach comprises experimental and nonexperimental designs. For this research the nonexperimental design approach was used.

3.1.1 Locational analysis

The first part of the analysis was based on the locational theory of the housing market covered in the literature review. I looked at how location mattered in the determination of house prices. Geographically I focused on the greater London area

and its 32 boroughs. In line with locational theory, I looked at the travel time it took residents from a borough to get to the centre of the city centre where employment opportunities and commercial, cultural, and social activities are concentrated. Underlying is the idea that there is a trade-off between paying a higher price for housing nearer to the city centre or opting for a cheaper dwelling further away and accepting a longer commute. I then tested this hypothesis using statistical analysis.

If this turned out to be the case, then one could assume that people who are priced out of the residential areas near the city centre move towards the further away boroughs when they look for affordable housing, as has been suggested by various research cited in the literature review. The implication would be that everything that makes transportation less time consuming and cheaper, will aid those who are in search of affordable housing as the commute will be less of a burden to them and they will find it easier to move to a cheaper residential area. But one could also argue that everything that makes people less dependent on the central areas for jobs, shopping, and social and cultural activities, will also aid them to access affordable housing. The development of peri-urban centres that offer a wide range of amenities would be one example. The actions that can be taken to increase the affordability of housing will be discussed in Section 5.

3.1.2 London boroughs

London consists of 32 boroughs, as can be seen in *Figure 5*. The City of London is not included as a borough.

The inner London borough are: Camden, Hackney, Hammersmith and Fulham, Haringey, Islington, Kensington and Chelsea, Lambeth, Lewisham, Newham, Southwark, Tower Hamlets and Wandsworth.



Figure 5: London Boroughs. Source: data extracted from londoncouncils.gov.uk.

The outer boroughs are: Barking and Dagenham, Barnet, Brent, Bexley, Bromley, Croydon, Ealing, Enfield, Greenwich, Harrow, Havering, Hillingdon, Hounslow, Kingston upon Thames, Merton, Redbridge, Richmond upon Thames, Sutton, and Waltham Forest.

3.1.3 Time series analysis

The second part of the analysis was based on time series and looked at several of the determinants of house prices that came out of the literature review. Many of these work through the supply side of the housing market. They included the inflation rate,

the interest rate, the prices of construction materials, the number of land permits granted and the number empty properties in London. The interest rate worked both ways, on the one hand it makes construction more expensive by raising financing costs, on the other it increases the cost of mortgages for potential buyers, which reduces the demand for housing. Household income as the key demand-side factor was also included. The analysis should show which are in fact the most important drivers determining house prices in London.

3.2 Model and data

For both parts of the analysis, I applied the linear regression model. Linear regression analysis involves examining the relationship between a dependent variable and one or more independent or explanatory variables. Statistically, the relationship between a dependent variable (y) and the independent variables (x_1, x_2, \dots) is expressed as:

$$y = \beta_0 + \beta_1x + \beta_2x \dots + \varepsilon$$

I carried out the linear regression analyses using the Jamovi 2.3.21 statistical analysis package. The estimates of the slope coefficients β_1, β_2 , etc., are a measure of the effect that each independent variable has on the dependent variable. The coefficient of determination (R^2), which is also obtained as a result of the analysis, is a statistical measure which shows how much of the variation in the dependent variable can be explained by all the independent variables combined.

3.2.1 Locational analysis

As discussed by the Hoyt model, consumers make choices on their housing based on a trade-off between housing prices and the cost of commuting. In practice, the “cost” of commuting includes the time spent travelling and the price of the tickets or the cost

of the car trip, and these are normally linked to the travel distance. The further away a residential area is from the place of work or the city centre and the higher therefore the commuting cost, the lower the house price is expected to be. However, while distance plays a role, the main determinant of the housing preference can be expected to be the income level of the buyer (GLA Economics, 2004).

In my regression analysis, I therefore used the house price as the dependent variable and household income and travel time as the independent variables.

Before carrying out a regression analysis, I had to calculate the average travel time from each borough to Central London. Firstly, it is important to define 'Central London'. In this case, I searched for the most central station in London which is Charing Cross Station. Hence, I calculated the average travel time from each borough to Charing Cross Station. I used the 'Transport for London' to calculate the average travel time (see *Table 6* in the Appendix).

The data for medium household income by borough, the other independent variable, is taken from Tower Hamlets Corporate Research Unit (2018). This data, which is for 2018, is the most recent data on median household income by borough I could find.

This measure is based on Census data and measures disposable income, which is the amount of money households have available for spending and saving after direct taxes have been accounted for. It includes earnings from employment, private pensions, and investments as well as cash benefits provided by the state (Office of National Statistics, 2023). Income data is reported both as mean and median. A limitation of using the mean is that it can be influenced by just a few individuals with very high incomes. Median household income shows what the income of the 'middle' household would be if all households in the area were ranked from poorest to richest

and provides a good indication of the ‘typical’ household income (Office of National Statistics, 2023). I therefore used the median income measure.

The data for the dependent variable - average house price for each borough - is taken from HM Land Registry (2019). Average house prices are readily available for each year up to 2022, but because the most recent data on household income by borough I could find is for 2018, I also used 2018 house prices in the analysis to be consistent. This data is shown in *Table 6* in the *Appendix*.

3.2.2 Time series analysis

The data for house prices used in the time series analysis are average London house prices taken from the Greater London Authority website (GLA, 2023). As a measure of inflation, the UK consumer price index was used (YCharts, n.d.). For the development of costs in the building industry, I used the UK construction price index published by IBISWorld (2023). For the interest rate I used the Bank of England’s official bank rate (Bank of England, n.d.). The BoE bank rate gets adjusted at irregular intervals (e.g., there were eight adjustments in 2022), so when there is a year with different interest rates, I used a simple average as the annual rate. As an indicator for planning and permitting, I used the number of building permissions granted for residential buildings in London and, for comparison, the number of residential completions. This data is obtained from the Greater London Authority (2023a,b) Data Store. Time series data on median disposable household income is obtained from the Office of National Statistics (2023). Concerning empty properties in London, I unfortunately could not find consistent time series data, so I had to drop it from the statistical analysis. The data for the analysis are shown in *Table 7* in the *Appendix*.

3.2.3 Methodological limitations

One of the main limitations of the methodology is that it does not allow integrating the locational analysis with the time series analysis of the main supply and demand factors. When I started out with the research for this thesis, I wanted to identify the main factors that drive house prices up and make housing unaffordable, and to look at them together. I was convinced that geographical location played an important role and thought that I could perhaps use a panel data approach combining time-series data with locational data across London boroughs. However, in the end this turned out to be impossible, because for many supply and demand variables data at borough level do either not exist or there is no variation in the data from one borough to another (e.g., for interest rate or the inflation rate). Therefore, I had to split the analysis into a separate locational and time series analysis.

Another limitation of the methodology is that it does not allow to address all of the research questions specified in Section 1.2. In particular, the research questions linked to government policies in the housing market and their role for alleviating the affordability crisis, are only addressed in a very limited way in the model (e.g., through the variable 'building permits'). There are many different policies that affect house prices and affordability, and they will mostly be addressed in a descriptive way in Section 5.

Finally, the use of the linear regression model puts limitations on the methodology. In case there are non-linear relationships between the variables, the linear regression model will not be able to capture them properly.

There are also other limitations linked to data availability and gaps, which are described in Section 4.3 "Limitations of the analysis".

4 Analysis and results

4.1.1 Locational analysis

For the first part (locational analysis across London boroughs), I examined the scatterplot of house prices versus median household income (*Figure 6*).

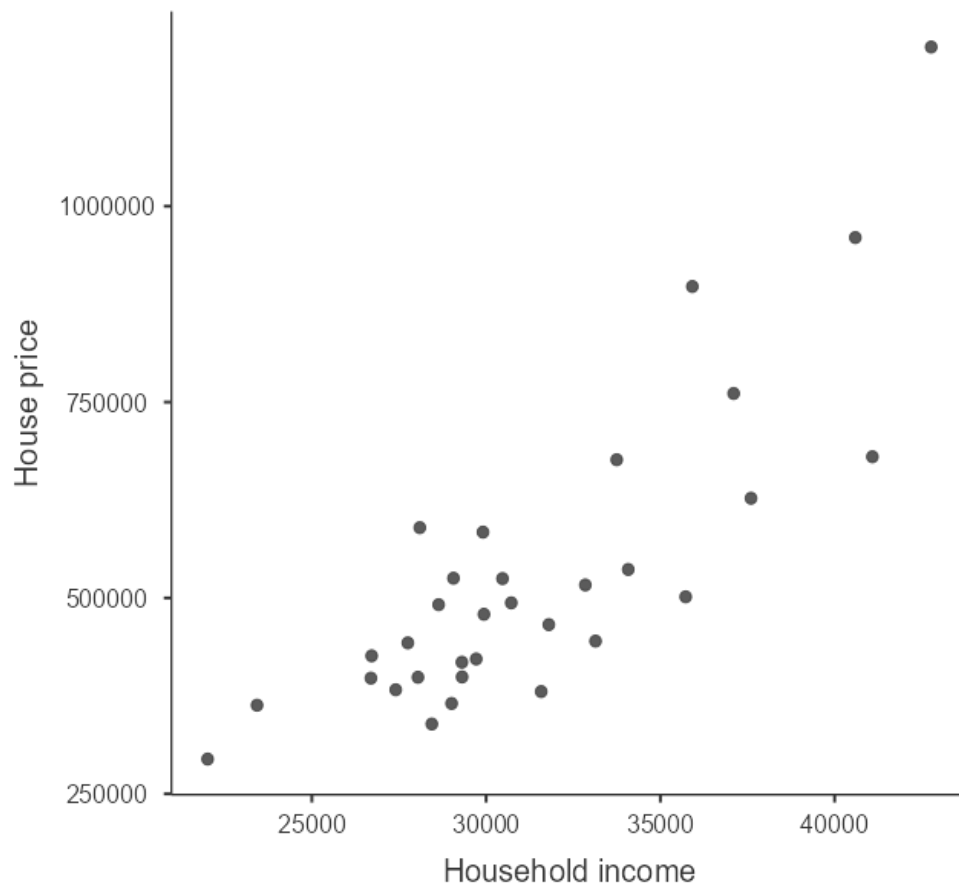


Figure 6: Scatterplot of average house prices and median household income. Created by the author on Jamovi.

As expected, the scatterplot exhibits a clear positive relationship between house price and household income. What is more, there is only one point that could perhaps be qualified as an outlier, and this is the last point in the right upper corner of the scatterplot. This point corresponds to the borough of Kensington and Chelsea. This is not entirely surprising as the area of Kensington and Chelsea is very popular with foreign investors. Trust for London (2022) estimates that this area accounts for 13% of all offshore-owned homes in London (the other two areas where foreign real estate investment is concentrated are Westminster and the City of London). One can therefore assume that the very high average house price in Kensington and Chelsea is partly caused by foreign investors. On the other hand, Kensington and Chelsea is not a heavy outlier and given that Westminster (the borough with the second highest house price) appears to fit the overall pattern, I do not see enough reason to exclude Kensington and Chelsea from the analysis.

The second scatterplot shows the relationship between house prices and the time it takes to travel from each borough to the city centre (*Figure 7*). The patterns that is visible from the plots shows a clear negative relationship between the two variables. There are two potential outliers. The first one corresponds again to the borough with the highest income (Kensington and Chelsea). The outlier position could be due to the inflated average house price in this area, but it could also be influenced by the choice of reference location from the city centre (Charing Cross Station). The second potential outlier is the point that is closest to the vertical axis, that is, the borough with the shortest travel time from Central London, which is Southwark. Here again an explanation could be the choice of Charing Cross as reference point for Central London, as Southwark lies just across the river from it. In any case, I do not see these

explanations as sufficient reasons to exclude the two potential outliers from the analysis.

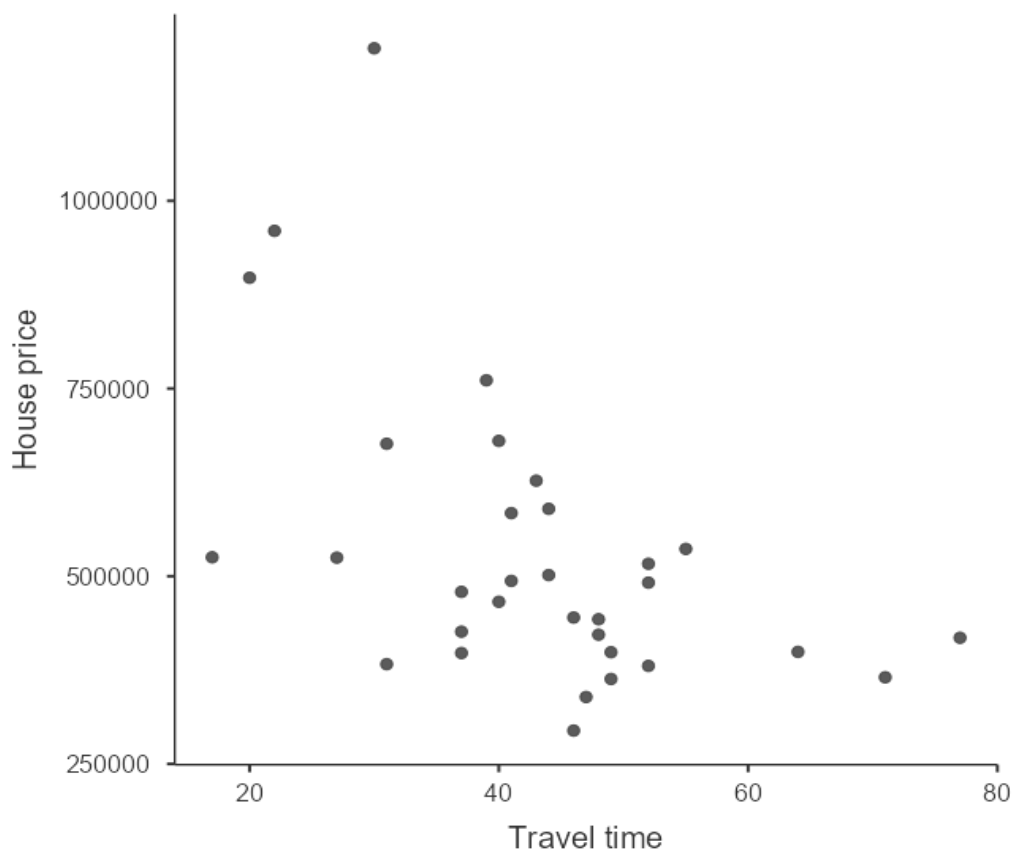


Figure 7: Scatterplot of average house prices and travel time to Central London. Created by the author on Jamovi.

The results of the linear regression analysis are shown in *Table 1*. The estimated coefficient of the income variable is positive as expected and the estimate of the travel time variable is negative, as would also be expected. Both estimates are statistically significant at the 1% level (the p-value for household income is $< .001$, the p-value for

travel time is .003). The two independent variables explain 76% ($R^2 = 0.764$) of the variation in the house price across London boroughs. I think that this is a fairly high proportion, given that the value of an individual housing property depends on many characteristics.

Model Fit Measures

Model	R	R ²
1	0.874	0.764

Model Coefficients - House price

Predictor	Estimate	SE	t	p
Intercept	-198087.0	151657.14	-1.31	0.202
Household income	29.5	3.84	7.67	< .001
Travel time	-4518.5	1405.67	-3.21	0.003

Table 1: Results of the linear regression (locational) analysis

Overall, the results support the hypothesis that people looking for housing consider a trade-off between the price of housing and the distance from the city centre. The estimate of the travel time coefficient would suggest that for each extra minute of commuting the house price decreases on average by £4,519.

4.1.2 Time series analysis

The time series for the variables used in this second part of the analysis go from 2005 to 2022, except for the construction price index for which I could only find data from 2010 (see *Table 7* in the Appendix). The analysis was therefore carried out in two

steps, first using the longer time series but without the construction price index, then with the shortened time series including the construction price index.

I ran linear regressions with different combination of the independent variables, which all show that the interest rate is insignificant whenever it is included together with the inflation rate (consumer price index). When the two are included separately, then both produce significant estimates. *Tables 2 and 3* show the results of the two different model runs.

Model Fit Measures

Model	R	R ²
1	0.969	0.940

Model Coefficients - House price

Predictor	Estimate	SE	t	p
Intercept	-1.02e-6	175050.168	-5.85	< .001
Consumer price index	5671.88	852.243	6.66	< .001
Residential approvals	1.19	0.407	2.93	0.011
Household income	25.80	7.442	3.47	0.004

Table 2: Results of the linear regression (time series) analysis

In *Table 2*, the slope estimates of the inflation rate and the household income are statistically significant at the 1% level, and they have the expected signs. House prices increase with inflation and household income. The estimate for residential building permits is also statistically significant. It misses the 1% significance level but would easily be significant at the 5% level. The surprise is that the slope estimate has a

positive sign when a negative would have been expected (the greater the number of building permits, the lower the price of housing one would expect).

I can only guess what caused this result. Perhaps the permits do not influence the price immediately but only a few years down the road when the new homes come on the market. To test this idea, I also tried ‘residential completions’ instead of ‘residential permits granted’, but the results were similar. Or perhaps the causality is the other way round: when house prices are high more permits are granted.

Model Fit Measures

Model	R	R ²
1	0.914	0.835

Model Coefficients - House price

Predictor	Estimate	SE	t	p
Intercept	-1.36e-6	266828.767	-5.10	< .001
Interest rate	-17616.34	6517.754	-2.70	0.017
Residential approvals	1.32	0.675	1.95	0.071
Household income	56.11	8.569	6.55	< .001

Table 3: Results of the linear regression (time series) analysis

Table 3 shows the same regression analysis with interest rate instead of inflation. Household income has a similar positive and significant estimate as before, and the estimate for residential approvals is also not very different, although it is no longer significant at the 5% level. Interesting is the estimate for the interest rate, which is negative, and which would suggest that a 1% increase in the interest rate would lower house prices by £17,616. This is in line with general expectations and indicates that

the increase in building costs triggered by higher interest rates is not as important for the house price as the reduction in demand due to more expensive mortgages.

Table 4 shows the results of the second step of the analysis, where the construction price index is included as an explanatory variable (and shorter time series are used). The coefficient of the construction price index is positive as would be expected (higher construction prices lead to higher house prices), but it is not statistically significant. The estimates for household income and residential permits lie in the same range as in the first step of the analysis, however, the significant levels are not as good, which probably has to do with the shorter time series. The interest rate has a negative slope estimate of a similar magnitude as before, but this time it is statistically not significant.

Model Fit Measures

Model	R	R²
1	0.921	0.848

Model Coefficients - House price

Predictor	Estimate	SE	t	P
Intercept	-1.12e-6	266640.610	-4.188	0.003
Construction price index	3474.27	2454.834	1.415	0.195
Interest rate	-18033.35	46729.766	-0.386	0.710
Residential approvals	1.46	0.694	2.112	0.068
Household income	37.11	12.599	2.945	0.019

Table 4: Results of the linear regression (time series) analysis

Overall, the time series analysis confirms many of the assumptions made on the basis of the literature review, with one big exception – the positive link between building

permits and house prices. This is a counterintuitive result which I find difficult to explain, especially as it is in contradiction to the results of all the previous research I have been looking at. I will briefly come back to it in the sub-section on the limitations of the analysis.

4.2 Summary of the results

In this section I want to relate the results of the analysis to the initial research questions. The first question was:

- *How does the spatial location of the different boroughs in London and their distance from the city centre influence housing prices and thereby the affordability of housing?*

This question is addressed by the locational analysis. The results show that there is a statistically significant link between the distance from the city centre as measured by the travel time and the affordability of housing. The further away a residential area from the centre of London is, the more affordable housing becomes. The estimates suggest that for every extra minute one is willing to commute, on average £4,519 can be saved from lower house prices.

This confirms the hypothesis derived from the locational theory of housing that there is a trade-off between the cost of commuting and the cost of housing. Lower-income groups in search of affordable housing are likely to end up living in the outer parts of London.

The second research question was:

- *What are the main supply and demand factors that have affected the evolution of house prices in London over time?*

This question was addressed through the time series analysis. The analysis looked at household income, the inflation rate, interest rates, residential building permits and construction prices as possible variables determining housing prices. The results show that housing prices are positively linked to household income, construction prices and the overall inflation rate. The effects of household income and the inflation rate were found to be statistically significant, that of the construction price could not be ascertained with statistical significance, but this could have to do with the relatively short data series for this indicator.

The effect of the interest rate on housing prices is negative, also with statistical significance. This is explained by the reduction in the demand for housing due to the higher cost of mortgages. The estimate of the interest rate coefficient suggests that a 1% increase in the interest rate lowers house prices by £17,616. Although this result is based on historical data, it is interesting in view of the current interest rate increases.

The surprise element in the time series analysis was a positive statistically significant estimate for the residential building permits. A negative estimate would have been expected, as a greater number of building permits should translate into an increase in the housing supply and therefore lower the price of housing. This result is difficult to explain without further research, although some possible shortcomings in the analysis that could have triggered this result, are mentioned in the next sub-section.

The third research question, which concerns possible government interventions to alleviate the housing crisis, will be discussed in Section 5.

4.3 Limitations of the analysis

As far as the locational analysis is concerned, the two independent variables explain 76% of the variation in average house prices across London boroughs, which I think is a good result. Nevertheless, by working with only two independent variables the heterogenous character of the housing object is not well captured. In practical terms house prices are determined by many factors as the literature review has shown. One possibility to improve the analysis would be to include further variables, especially variables related to the quality of the housing property, such as the living area of an average house in square metres or the average number of rooms in every borough. Data on other amenities, e.g., gardens or other house attributes and amenities linked to the area (parking, schools, safety, etc.) could also be included as explanatory variables.

Eventually, this could lead to an analysis which is linked Hoyt's sector model, where different residential sector types within the Greater London area are distinguished based on a bundle of indicators. For instance, to better explain the relationship between prices of dwellings and housing attributes in comparison to the market, the London area could be split into five submarkets, each of which is specific to various housing and other locational indicators. *Table 5* shows such a subdivision based on data extracted from a Greater London Authority publication (Greater London Authority, 2004).

Another issue is the choice of Charing Cross Station as Central London. This choice has a considerable impact on the relative travel time from the central boroughs, as we

have seen when Southwark showed up as a potential outlier in the scatterplot (*Figure 7*). Southwark has an unusually short travel time to Charing Cross as it lies right on the other side of the Thames. If a different reference point had been taken, another central borough would have been the closest. To test the robustness of the results, one could carry out sensitivity analysis by choosing an alternative point as the central location, e.g., near the financial district.

Type of submarket	Explanation
The Central Cluster	<ul style="list-style-type: none"> • higher house prices • fewer rooms for every household • better performing for secondary schools • more self-employed people • highest working age people
The Crowded House	<ul style="list-style-type: none"> • consists of a higher proportion of individuals living in social housing • has the most people living in overcrowded conditions
The Pleasant Crescent	<ul style="list-style-type: none"> • more people in full-time employment • has good schools
Suburban London	<ul style="list-style-type: none"> • large properties but lower average house price • highest proportion of youth (0-19 years old)
Leafy Retreat	<ul style="list-style-type: none"> • highest proportion of people living in owner-occupied dwellings • highest size of average household • highest average of rooms per household

Table 5: Submarkets of the London housing market

Concerning the time series analysis, I see the limitations primarily in the quality of the data. For each of the independent variables (inflation rate, interest rate, building costs, permits) there are different data series one can use. They all have different definitions and often different lengths and frequencies, which makes it challenging to

put together a consistent set of time series for the analysis. For instance, the data on residential building permits used in Section 3.3 consists of a range of sub-categories, which may not all be relevant for explaining changes in house prices. To eliminate such risks, it would have been necessary to carry out preliminary data analysis and testing, but this would have been very time consuming and gone beyond the scope of this thesis.

The different length of the time is also a limitation, as the shortest series (the one for construction prices in this analysis) determines how many observations one has in a regression analysis when using the full set of variables. This is so because the other variables also have to be shortened to the same length. This can lead to statistically non-significant results, as we have seen in the model run that includes the construction price index (*Table 4*).

Another possible limitation stems from the fact that I have used nominal values for house prices. In the literature I have seen that very often prices are deflated to take out the impact of inflation. In my analysis, whenever I included both the interest rate and the inflation rate as explanatory variables, none of them had a statistically significant effect on house prices. When I included them separately, they both did. Perhaps this has to do with having used nominal house prices, but I am not sure.

Finally, there is the counter-intuitive result concerning housing permits, which contradicts economic logic and goes against the conclusions found in the literature. Perhaps this result is linked to the fact that in the regression analysis only observations from the same year were used for prices and permit, whereas in practice the effect of building permits on housing prices may only be felt with a delay. Also, the literature review has shown that in England building companies often speculate with the land

and the build-out rate is fairly low compared with, for instance, Germany. So, not including time lags and not accounting for utilisation rates of permits in the model, may also have limited the analysis.

5 Discussion

In this chapter, I will examine different avenues how the affordability-of-housing crises in London can be addressed. None of them in isolation will be able to solve the problem, but together they could offer a menu of possibilities to alleviate the situation.

The section is organized in several parts, where the first part is linked to factors which entered into the locational analysis in Chapter 3, essentially factors around the variable “travel time” from the housing location to the city centre. This variable was chosen as a proxy for the distance of the housing location from the place of work and services and amenities, such as cultural activities.

The second part looks at the factors linked to the time series analysis in Sections 3 and 4, and which mostly influence the cost of providing housing, including inflation and interest rates, and building permits, but also the demand side (interest rate). But some other factors that could not be included in the analysis for lack of suitable time series data, such as empty properties, will also be examined. In all this, I want to see what policies can do to stimulate the supply of housing and how existing affordable housing schemes could be changed to make them more effective.

I also want to look at possible innovative ways of low-cost sustainable construction, which could offer a path towards more affordability. In this respect, I would like to examine especially the ideas offered by the New European Bauhaus.

Finally, I want to look at how the challenges of providing affordable housing are dealt with in Vienna and see if there is anything that London could learn from it.

5.1 Facilitating access to affordable housing in a spatial context

The idea behind locational theory is that there is a trade-off between the cost of housing and the distance to the city centre where the major activities usually are. One could argue that the less the distance weighs in the consideration of people when they make their housing choice, the easier they will find it to move further away and benefit from lower house prices. This will allow lower income households, including the young, to accede to adequate housing at a greater distance from the city centre, without paying too high a price in terms of locational inconveniences.

Factors that could play a role here are the cost and the time of commuting, possibilities of remote working, and decentralising cultural and other activities to peri-urban hubs so that the need to go to the city centre is diminished.

5.1.1 Lowering the cost of commuting

As Summer (2023) points out, public transport in London is expensive. In fact, a comparison of 45 global cities, among them most European capitals, shows that single tickets as well as monthly passes are most expensive in London. According to Summers, the monthly public transportation pass within London amounts to 7.4% of the average monthly net wage. This percentage is surpassed by only one other of the 45 surveyed cities (Sao Paulo). Most EU capitals have ratios between 2% and 3% or

even lower (e.g., Vienna 1.7% and Berlin 1%). Lowering the cost of public transportation would significantly reduce the cost of commuting in London and free up money people could use for housing and other necessities.

Providing cheaper train connections to the surrounding towns would also make it easier for low-income households to look for affordable housing outside London and commute to work into the city. To target groups that are in most need of affordable housing, subsidised transport passes could be provided to socially weaker households and the young. Free travel on public transport is currently limited to people over 60 and the disabled, who have less need for commuting to work.

Unfortunately, the prospects for this to happen are not very good. Harding et al. (2022) point out, the London public transport system is unusual among major cities as it is almost entirely funded by fares and the lower passenger number during the COVID pandemic have put the system under financial stress. It could well happen that investments are curtailed, and fares further increased, which would hit the poorer parts of Londoners and commuters strongest. Harding and al. (2022) speak even of a “managed decline” of the London public transport system.

5.1.2 Facilitating teleworking

Another measure that could help is to reduce the dependence on commuting by actively promoting teleworking. Teleworking has become a normal feature of work life during the COVID pandemic, but now many institutions and companies are moving towards a hybrid model, where employees work two or three days a week in the office and the rest at home. Some companies are encouraging their staff to come back fully to the office.

While the situation is different from sector to sector and teleworking is not even an option for many industrial workers and other job categories where physical presence at work is necessary, many Londoners in the city's big service sector could work remotely on a permanent basis, or at least a large part of their time. Stable long-term arrangements for teleworking employees can rely and plan on, would reduce the need for commuting and allow people to look for affordable housing further away. Especially for the young who are growing up with modern information technology and who are used to communicating via digital means, this could be a real opportunity that would also improve their housing situation.

5.1.3 Better integrating residential and commercial areas, peri-urban hubs

One possible initiative for supporting individuals would be to build new affordable dwellings closer to business and commercial centers outside the city centre, so that people do not rely as much on central London for jobs and key services. Policies should be tailored so that they affect the location of housing and employment as well as transportation simultaneously. Eventually, this requires integrated urban planning. It would also expand the radius for people searching for affordable housing further into the countryside where house prices are still lower.

5.2 Increasing the supply and reducing the cost of housing

5.2.1 Increasing the supply of land / building permits

The time series analysis in Chapter 3 did not confirm what would have been expected, namely that an increase in building permits reduces house prices. However, this is probably due to problems with the way the model was set up, or poor data, because there is plenty of evidence in the literature as has been shown Chapter 2, that the

restrictive approach to land development and issuing building permits in the UK and London has limited the supply of housing and contributed to the current housing crisis. It appears to me that the London authorities need to take a more proactive role in the planning system. An important step forward for this could be to change the permitting process, so that permitting gain doesn't go to the private landowner or builder, but to the local authorities as is the case in Vienna or German cities. This would reduce the incentive for builders to hoard land for speculative reasons and would also supply local authorities with extra income they can use to combat the affordability crisis.

5.2.2 Incentivising new housing constructions

One possibility to increase the supply of housing and therefore counter the rise in house prices might be to extend the help-to-build equity loan scheme. As mentioned in the literature review, this scheme subsidises the purchase of land and the construction of new private houses, but also the conversion of commercial property into residential property, and for replacing an existing building by a new home or 'topping it up' by building a new flat above it.

In my opinion this scheme provides good opportunities for the creation of new living space, especially as it provides an incentive for reusing already built-up land and converting old commercial buildings. The vertical extension of buildings is also a promising approach, especially in crowded cities. These measures allow for an economic use of land, which is important for London given the astronomically high land prices.

However, low-income households and young people with starting salaries may be excluded from the scheme if they do not qualify for a bank loan to supplement the

government loan (which is a requirement of the scheme). One way of improving the scheme would be to make it possible also for these groups to benefit from it, for instance, by providing guarantees for bank mortgages for low-income groups.

Another way of improving the scheme could be to extend it to no-profit organisation, which would then offer the dwellings at favourable terms to tenants, which is discussed in more detail in section 4.3 'Learning from Vienna'.

In this context, one possibility would be to try to reverse the long-term decline in social housing. Awareness that there is a need for more social housing is growing and the issue is being hotly debated (UK Parliament, 2023). But with a net loss of 165,000 social homes over the last ten years and 1.2 million households in England currently on a waiting list (UK Parliament, 2023), this will be quite an uphill battle.

The other affordable housing schemes mentioned in the literature review, the right-to-buy scheme, the help-to-buy scheme and the shared-ownership scheme, in my opinion are less suitable for fighting the housing crises, as they only help households to turn their tenancy into ownership (right-to-buy scheme and shared-ownership scheme) or increase the demand for housing (help-to-buy scheme), which could further increase house prices given the inelastic supply.

5.2.3 Reducing inflation and interest rates and thereby building costs

Inflation and high interest rates contribute to the rising costs of new housing construction and the renovation and conversion of existing buildings. Inflation affects the price of building material and increases labour costs through higher wages which usually follow inflation. It also leads to higher interest rates making the financing of

building work more expensive. The current high inflation and rising interest rates will therefore have a negative effect on the supply of new and renovated housing.

Inflation is a macroeconomic issue, and it is largely the job of central banks to do something against it. Raising interest rates and restricting the money supply are the two main tools the central bank has to fight inflation. However, higher interest rates discourage investments and slow down economic growth, so central banks have to be careful to find a good balance. The housing market is an important factor, but not the only one that needs to be taken into account.

Given that the economic crisis of 2008 was triggered by a collapse of the housing market because people in America could not make their mortgage payments anymore, policy makers need to be careful that they do not raise interest rates too much.

Apart from these macroeconomic considerations, everything that can be done to help low-income households to spend less money on necessities, such as food, in periods of high inflation will make it easier for them to pay for rent. Some countries are also considering freezing rents where these are tight to the inflation rate, but in my opinion, this can only be a short-term measure until the inflation is back to normal levels.

5.2.4 Taxing empty dwellings or land banks

The literature review has shown that the number of 'void' or 'dormant' houses in London has increased substantially. There are currently nearly 90,000 empty houses in London. This creates an inefficiency in the housing market.

While some of these houses will be in the transition process between owners or tenants, others are held back for speculative reasons, because the owners treat the property as an asset and expect an increase in value by holding it back from the market. The same applies to land acquired by property developers and 'parked' in land banks in expectation of higher permitting gains in the land planning process.

Some countries have introduced taxes on empty dwellings to encourage their owners to put them on the market. In Austria, the provinces of Styria and Tirol have such taxes ('Leerstandsabgabe') and the regional government of Salzburg has tabled a proposal to introduce one (Grünbacher, 2022). Vienna also taxed empty apartments in the 1980s but gave it up again for legal reasons (Grünbacher, 2022). Other countries where empty homes are taxed include the Basque Country in Spain (Wochenblatt, 2021) and Luxembourg (Government of Luxembourg, 2015). Usually, the decision to tax or not is left up to the regions or communes, and a property is subject to the tax if it has been empty for a period of between one and two years depending on the country. In Luxembourg, land that could receive building permission but has not received it for at least three years, can also be taxed (Government of Luxembourg, 2015).

Some have questioned the mobilising effect of a tax on 'void' or 'dormant' properties because there are many reasons why a property may be empty and it is difficult to identify the cases where speculation is the main reason, and it may also not be possible to impose a tax that is high enough to change the behaviour of the owner (Grünbacher, 2022). Also, while nearly 90,000 empty properties in London may seem as a high number, West (2023) points out that this is a considerably lower rate than for instance what Paris has. However, I believe that given the size of the current housing crisis, it would also make sense to consider introducing such a tax in London.

5.2.5 A new approach to building houses: The New European Bauhaus

The Bauhaus is a school of architecture which originated in the eastern part of Germany, and which flourished in the first half of the last century (from 1919-1933). The names of famous architects, such as Walter Gropius and Mies van der Rohe, are associated with this movement. Their goal was to construct a 'building of the future' which would be a synthesis of the arts, would primarily be functional, and would form a harmonious whole (Sachsen-Anhalt, 2019). But the Bauhaus was also inspired by the dream of nature-friendly, healthy living at a time when there was a serious housing shortage, as more and more people flocked to the cities due to the rapidly increasing industrialisation (Sachsen-Anhalt, 2019). People were still poor as a result of the destructions of World War I. The apartments of residential Bauhaus buildings had a small yet efficient layout with modern kitchens and bathrooms and were often provided with kitchen gardens so that the residents could grow their own food. The buildings were painted in warm and varied colours and had communal spaces, shops, playgrounds, green spaces, and a laundry for the housing estate (Sachsen-Anhalt, 2019). The buildings were designed so that so that they could be built fast and relatively low-cost, often using prefabricated components, while at the same time they provided an attractive living space for the residents. The well-being of the tenants was paramount.

Most original Bauhaus buildings are no longer in use or are protected buildings of historical interest, but many of the ideas developed by the Bauhaus architects have survived and have recently been taken up again under the name of New European Bauhaus (NEB). The aim of the NEB is to create innovative forms of housing that combine three elements: aesthetics, sustainability, and inclusiveness (European Commission, 2021). At a time when the gap between the rich and the poor has

reached new proportions and affordable housing is becoming a major issue, the NEB is an interesting development to follow.

The movement, which is backed by the EU, is still in its experimental stage, but has already triggered a range of initiatives, such as awarding prizes for innovative NEB projects and solutions, a NEB Lab, which acts as a think tank, a NEB festival, all the way to the development of certified reference materials for the energetic insulation of buildings (EU Science Hub, 2021).

One NEB pilot project examines regulations that restrict or help transform the built environment and is directed at those who “want to build, construct or renovate in a more sustainable, inclusive, and beautiful way” (European Commission, 2022). It invites architects, engineers, urban planners, designers, public servants, companies, and citizens to share their experience in order to improve construction sector regulations (European Commission, 2022).

The NEB prizes for innovative projects, which are awarded every year, include good practice examples of how housing can be made more affordable. The 2023 edition, for example, includes: a major urban transformation project in a deprived residential area of a Danish city, where 2,000 affordable homes were renovated in cooperation between the residents and urban planners; a project to reintroduce affordable and sustainable housing in a Prague neighbourhood where private developments had pushed locals out, by converting a vacant municipal space to homes; a Dutch project for affordable housing through a vertical extension of two new storeys on top of existing buildings, while at the same time renovating the old flats and upgrading them energetically; a project for the creation of rooftop amenities in Paris; and two projects in Austria, an eco-housing project offering a safe and communal living environment

for women, single mothers and their children (“Volkshilfe Hafen”) and a wood-based, innovative co-housing project, which is collectively owned and managed by the residents and which emphasizes affordability, inclusion and community (European Commission, 2023).

The NEB will not solve the affordable housing crisis in the short run, but it shows that the problem is now widely recognised throughout Europe and many people are currently working to find innovative ways of addressing it. Some good out-of-the-box solutions may emerge which can be used to fight the housing crisis in the long run.

5.3 Learning from Vienna

Vienna has consistently been at the top for the Global Liveability Index (Lang, 2022). This index, which is published by the Economist’s Intelligence Unit, is calculated based on various criteria, such as culture, environment, education, healthcare, and infrastructure (Lang, 2022), with Vienna coming at the top for almost all of these factors. The average monthly rent in Vienna amounted to roughly €767 in 2022, whereas it amounted to about €2,708.99 (£2,343) in London (Lang, 2022).

The question is what exactly is Vienna doing differently to London, and can we take any learnings from the Viennese system? Unlike in many other major cities, the City of Vienna is a major player in the Viennese housing market. It owns a substantial part of the Viennese housing stock, which it has never sold off. According to Lang (2022), Vienna’s availability to supply subsidized housing influences also the rents in the private sector.

Almost half of the population of Vienna live as tenants in communal or council buildings, the so-called ‘Gemeindebauten’ (Peter und Rakos, 2022). These are council

flats that are under the control of the City Government and the allocation of these apartments takes place based on a 'points-based' system.

Vienna's policy of supplying affordable housing goes back to the 1920s, when the city was suffering from poverty following World War I. At that time the City of Vienna acquired land at good prices throughout the city and in the surroundings, which it developed over the next years and decades. Between 1923 to 1934, for instance, 64,000 new units in 400 housing blocks were built and one-tenth of the population were rehoused in these buildings. The rent was set at 3.5% of what was an average worker's income then (Mari, 2023). Today, communal buildings containing a total of 220,000 flats are spread all over the city (Peter and Rakos, 2022).

In addition, there are various other social housing systems in Vienna, such as the housing 'co-operatives', which are housing associations that operate on a non-profit basis, with residents purchasing shares in them. These subsidised types of housing are constructed through partnerships between the public and private sector, with the government often providing low-cost financing for construction (Mari, 2023).

The rate of homeownership is lower in Vienna than in most other major cities (Peter and Rakos, 2022). Only around 20% of the Viennese own their apartment or house. Over 43% live in rented communal or cooperative accommodation, and just one-third rent their accommodation on the private market (Peter and Rakos, 2022).

Access to affordable communal accommodation is limited to families and individuals with an income below a certain threshold, which is, however, quite generous. In 2022, the threshold for individuals was around €49,000 after taxes (Peter and Rakos, 2022), which is a solid middle-class income. Rental contracts are indefinite and there are no consequences if the income later increases.

Renting a flat in a 'Gemeindebau' is therefore not restricted to the poor and the socially excluded. This way, the City of Vienna has ensured that there is mix of socially different groups throughout the city area and the divide between the rich and the poor, which has become so stark in other big cities, is less visible in Vienna. More than in other cities, housing in Vienna is still considered a public good and not only a business.

At the same time, groups with specific needs, such as the elderly (over 65), handicapped people or people with fragile health, single mothers, and the young (under 30) who can't afford housing on the open market, get special consideration (Wohnberatung Wien, 2023).

Furthermore, the rental prices of old buildings ('Altbau') are regulated. The monthly rents are calculated on the basis of publicly set reference values and indexed to the inflation rate, with adjustments made periodically. Tenants are therefore protected from exorbitant rent rises. So, even if developers of new dwellings can set rental prices as they like on the free market, the competition from the available stock of older, rent-regulated apartments limits the rents they can ask for. If they go too high, prospective tenants of new flats have the choice to opt for an old flat, which may not offer the same level of modern comfort but is cheaper. Altogether, two-thirds of Viennese rental housing is covered by rent control (Mari, 2023).

Vienna also has an 'active land policy'. Since 1984, the Fund for Housing Construction and Urban Renewal has been acquiring land for the sole purpose of social housing construction (Wohnbau Wien, 2023). The policy particularly makes use of acquiring 'brownfield land' (Wohnservice Wien, 2023), which is any type of land that has

previously been built on and which has been abandoned or is underutilised, for instance, because of pollution from industrial production.

Vienna's generous supply of social housing helps keep costs down for everyone. In 2021, Viennese living in private housing spent 26% of their net income on rent including energy costs, which was only slightly more than the 22% for social-housing residents (Mari, 2023). According to Mari, social housing drives rents down in the private market by as much as five percent. This effect was also confirmed by a recent study by the Austrian Economic Research Institute, which shows that the non-profit housing market has a moderating influence on rental prices in the private market. According to the study, a ten percent increase in the share of communal housing in the total rental market reduces annual rental costs in the private market by between €250 and €340 (Klien et al., 2023). The same study also shows that communal housing has acted as a trend setter as regards housing quality, encouraging private developers to offer at least the same quality standards.

According to the City of Vienna, nine subsidised non-profit housing projects in different districts are currently planned in Vienna (Wohnberatung Wien, 2023).

When the City of Vienna awards contracts for new non-profit housing projects, it does so on the basis of economic, architectural and social sustainability criteria. It has now also added a fourth pillar, namely ecological criteria, for the selection of housing projects. These include considerations such as geothermal heating, photovoltaics, renewable construction materials, efficient insulations, air circulation in the building and, most recently, also sun protection against overheating in the summer (Wohnberatung Wien, 2023). There is now a communal building that is supplied with 100% renewable energy for heating and cooling.

Greening of roofs and outside walls and green infrastructure in the areas surrounding the buildings are also part of the planning. Other criteria range from barrier-free pathways and mobility concepts and communal spaces for neighbourhood activities, to possibilities for urban gardening.

There are, of course, also drawbacks associated with the non-profit affordable housing opportunities. One is that access to these flats with favourable rents is not immediate. There is a waiting list and one has to count at least a year and a half from the time of applying until the allocation of a flat. Applicants have to be Austrian citizens (or equivalent) and have to have lived in Vienna for at least two years (Vienna online, 2023). The choice of apartment is also limited, one can state preferences, including with respect to the area, but then one is allocated an apartment that correspond as best as possible to the criteria, and one can reject the offer only once (Wohnberatung Wien, 2023).

While Vienna has become known as a city that deals quite successfully with the affordable housing crisis, there are also critical voices who question the financial sustainability of the Viennese model. Simon and Tielkes (2020) point out that Wiener Wohnen, the enterprise that manages the non-profit sector of the Viennese housing market, had a negative cumulative financial balance in 2016 (latest data available then), which puts in question its long-term financial viability and its capacity to build new affordable housing and modernise its old stock. The authors refer to the increase in empty flats from two percent to over four percent between 2013 and 2018 as evidence of difficulties to rent out the apartments (Simon and Tielkes, 2020). In a certain way this is in contradiction to the long waiting list communicated by the City of Vienna, but it could be explained by a backlog of modernisation investments, which makes part of the rental stock unsuitable for renting or less attractive for people.

Simon and Tielkes (2020) also criticise a lack of transparency in the non-profit housing sector and ‘hidden-costs’ that are often forgotten in comparisons with other big cities. They argue, for instance, that increases in running costs are more easily passed on to tenants in Vienna than in German cities.

Where they agree with others, however, is that Vienna has a good land bank policy. The City of Vienna owns a lot of permitted land as well as land that could receive planning permission. Private owners of land that is expected to be designated as building land in the future can only sell to the City of Vienna, which gives the City a strong hand in the price negotiations (Simon and Tielkes, 2020). This privileged position in the land market means that the City of Vienna is in good position to have a strong influence on the housing market also in the future.

Despite the many positive affordability aspects of Vienna, drawing lessons that London could learn from Vienna is not easy, as the structure of the housing market in the two cities is quite different. Forty-three percent of Viennese rent from the non-profit communal or cooperative sector, whereas this percentage has dropped to around 20.7% in London in 2020, down from 34.8% in 1981 (London Trust, 2023). Owner-occupiers account for half of the housing market in London, whereas only 20% of Viennese own their house or flat. While social housing in London has been on the decline, the trend for private rents went in the opposite direction and, according to Deputy-Director Dan Wilson Craw from Generation Rent, the private rented sector is now the fastest growing tenure despite an array of supposedly pro-home-ownership policies over the past decade (Evening Standard, 2023).

Another big difference is the strong role the City Vienna plays in the Viennese housing market, thanks to the large stock of rental buildings it controls, and its dominant position on the land market.

As Mari (2023) who compares Vienna to cities in America puts it, the key difference is that Vienna prioritises subsidising construction, while other countries, such as the United States focus on subsidizing people, with things like housing vouchers, mortgage subsidies or tax credits. One model focuses on supply, the other on demand. Vienna's choice illustrates a fundamental economic reality, which is that a large-enough supply of social housing offers a market alternative that improves housing for all (Mari, 2023). On the other side, policies that stimulate demand only intend to increase the price of housing if there is no matching increase in supply.

Comparing this with the main policies for affordable houses in England, it seems that the majority of these policies are aimed at strengthening the purchasing power of those who cannot afford to secure housing under market conditions. This makes it easier for people to enter the market, but it also increases the demand for housing and could push the market prices further up.

A good example is right-to-buy scheme, which has proven to be a major factor towards strengthening homeownership. As has been mentioned in the literature review, the right-to-buy scheme offers tenants of council flats or homes a sizeable discount on the market price if they want to buy the flat or home. This is a great help for people who could otherwise not afford homeownership, but it also diminishes the stock of council dwellings that can be rented out at favourable rates to new low-income tenants. So, in my opinion, if the rate of social housing construction does not keep up, the government will have less opportunity to offer affordable housing to

newcomers in the future. For a city like London, which attracts people from all over the world and keeps growing every year - the average growth in population over the last four years since 2019 was 1.25% (Macrotrends, 2023) - the right-to-buy scheme may not be a good long-term strategy to solve the affordability crisis.

Other schemes already mentioned before are the shared ownership scheme, which offers tenants the opportunity to buy a share of the property and pay rent to the landlord on the rest, and the help-to-buy scheme, which is an equity loan scheme, where the government gives out mortgage loans covering part of the total value of the property. These schemes facilitate access to home ownership, but they also stimulate demand and could push up property prices even further, given the inelastic housing supply on the London market.

The exception is the help-to-build equity loan scheme, which offers government-backed financing to individual or families for building a new home, including the cost of purchasing the land to build on. This scheme subsidises the supply of housing and has the attractive property that it can also be used for the conversion of commercial properties to residential homes, for replacing an existing building by a new home, and for creating a new living space on top of an existing building. In my opinion, this scheme is very promising for two reasons. Firstly, it makes building a new home cheaper for individuals and families and increases the supply of housing. Secondly, it encourages making good use of 'old' space that is sub-optimally used to create new residential properties. In crowded city like London with a shortage of land to build on this is very important.

However, the financial support is limited to private persons who are able to secure a commercial mortgage loan to cover the remaining financing need, which would make

it difficult for low-income or indebted households and young people without a financial history to benefit from the scheme. The Viennese approach of subsidising building costs for non-profit co-operatives and building associations appears to be more inclusive, as it does not shut out the most vulnerable groups. Also, in Vienna the government plays a greater role in shaping subsidised housing projects, including the creation of amenities surrounding the individual building objects, which is an important factor of peoples' choices as suggested by the locational theory of housing.

So, there are quite a few things London could learn from Vienna. But the strong focus on homeownership in London and the strong presence of the city government in the Viennese housing market, are structural differences that may make it difficult to transfer good practice policies from Vienna to London so that home-seekers in London who suffer from the affordability crisis could benefit from them.

6 Conclusion

6.1 Concluding statement

This thesis has looked at some of the key economic drivers and policies that have shaped the development of house prices in London. Using locational analysis, the study has shown that the spatial location of the different boroughs in London and their distance from the city centre (as measured by the travel time) influence house prices and thereby the affordability of housing. The further away a residential area is from the centre of London, the more affordable housing becomes. This confirms the hypothesis derived from the locational theory of housing that there is a trade-off between the cost of commuting and the cost of housing. Lower-income groups tend to cope with the affordability crisis by moving towards the outer parts of London.

The thesis has also looked at how the most important supply and demand side factors have influenced the evolution of house prices in London over time. The results show that house prices are positively linked to household income, construction prices and the inflation rate, whereas a higher interest rate, through its effect on mortgage costs, tends to reduce the demand for housing and house prices. It will be interesting to see whether the sharp interest rate increases we are currently witnessing will stop or even reverse the upward trend in London house prices.

The study also examined the link between residential building permits and house prices and found a positive relationship, whereas a negative one would have been expected. A greater number of building permits would be expected to increase the housing supply and lower house prices. An attempt was made to identify possible reasons for this surprising result, but no fully satisfactory explanation could be provided.

The policy part of the thesis examined policy options to address the affordability-of-housing crises in London. One set of options revolved around commuting and looked at how commuting could be made cheaper or how the need for commuting could be reduced. Another set of options concerned policies that could increase the supply of housing by, for instance, reducing the cost of construction, increasing the availability of building land or reducing the number of empty properties. The thesis also looked at how existing affordable housing schemes, such as the help-to-build equity loan scheme could be made more effective or better targeted to groups in need of affordable housing. Possible innovative ways of low-cost sustainable construction were also examined. The recommendations, which could offer a path towards better housing affordability are summarised in a separate sub-section below.

6.2 Limitations of the study and ideas for further research

The work on this thesis has been a journey of discovery and learning. It has made me aware that the affordability of housing is a highly complex subject - much more complex than I thought when I started researching it. The supply side of the housing market is influenced by an array of different factors that work together in various ways and which differ from location to location. The economic situation of individuals and households who are looking for housing (demand side) is also influenced by different factors. On top of that is an array of government regulations and programmes across a wide range of policy areas which influence the housing market.

I have been able to consider only a few of these factors in this study – the ones that are in my opinion the most important ones based on the literature review – and I have been able to address the different policy options for alleviating the housing affordability crisis only in a qualitative way. Covering a wider range of economic factors and going more into depth in the policy analysis would have required much more time than I had available. But even if time had not been a constraint, it would not have been possible to do a thorough analysis of all the economic and policy factors touched upon in the literature review.

To overcome these limitations, a follow-up study could either focus on a much narrower set of issues (e.g., one I am interested in and which I would like to pursue in my future professional life is the link between housing affordability and real estate finance), which would allow to go much more into depth on each one of these issues in the analysis, or one could look at a clearly defined case study e.g., of an affordable housing project, which would then make it possible to examine a much broader range of issues in relation to that project, again in more depth.

Another question is the availability of data. While at first sight, there are many available data sources about the London housing market, it turned out that to find consistent sets of data that can be used in statistical analysis is very difficult. The raw data published by the Office of National Statistics and other official bodies often need to be aggregated (e.g., to the London borough level) or prepared in another way so that they give consistent cross-sectional or time series. I also found that some websites provide graphs showing data trends for free, but the underlying data which would be needed for any analysis can only be obtained by paying a fee. I have therefore mostly used data and information that have been published by different London authorities as part of their reporting.

Due to these limitations, I have not been able to exploit all the data that is, in principle, available. To do so would have required a much larger investment than was possible. As a result, the thesis contains less quantitative and more qualitative analysis than was originally intended. A central lesson learned from working on this thesis is that consistent data sets on the housing market are difficult to come by and that a sufficient amount of time needs to be set aside for the preparation of the analytical data in any future research on this subject.

6.3 Recommendations

The discussion in Section 5 has given rise to a series of recommendations how the housing crisis can be alleviated, and the affordability of housing improved. These recommendations are summarised in bullet-point format the following paragraphs. At the end of each recommendation a reference is made to the relevant sub-section in the thesis where the recommendation is discussed in more detail.

Recommendations addressed to the government:

- Lower the cost of commuting for groups that are in most need of affordable housing, such as socially weaker households and the young, e.g., by providing subsidised transport passes (Section 5.1.1).
- Make the help-to-build equity loan scheme accessible to low-income groups and the young that cannot get matching bank loans, by providing guarantees for bank mortgages for these group (Section 5.2.2).
- Extend the equity loan scheme to non-profit organisations (Section 5.2.2).
- Reverse the downward trend in social housing (Section 5.2.2).
- Consider freezing rents for the socially weak in times of very high inflation, but only on a temporary basis until inflation returns to normal levels (Section 5.2.3).
- Change the system for building permits so that the permitting gain does not go to the private landowner or builder but to the local authorities, to reduce land use speculation (Section 5.2.1.).
- Introduce a tax on land that could receive building permission but where no application for a building permit is made, to increase the available construction land (Section 5.2.4).
- Consider introducing a tax on long-term empty dwellings to encourage their owners to put them on the market (Section 5.2.4).
- Review construction sector regulations to see if unnecessary red tape can be removed (Section 5.2.5).

Recommendation addressed to the government, business, and the building sector:

- Reduce the dependency on commuting by facilitating teleworking. Create long-term stable arrangements for teleworking on which employees can rely (Section 5.1.2).
- Encourage the development of peri-urban hubs that combine residential housing and employment opportunities, through integrated urban development projects (Section 5.1.3).

Recommendation addressed to government, architects, the research community, and local stakeholders:

- Experiment with innovative ways of socially inclusive building and a better use of urban space along the lines of the New European Bauhaus: bring together urban planners, architects, environmental engineers, social scientists, and local residents in support of this process (Section 5.2.5).

Bibliography

A new certified reference material in support of the New European Bauhaus. (2021, October 22). EU Science Hub. https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/new-certified-reference-material-support-new-european-bauhaus-2021-10-22_en, retrieved on May 19, 2023

Addison, C. (n.d.). Evidence review: housing and health inequalities in London. *Institute of Health Equity*. <https://www.instituteofhealthequity.org/resources-reports/evidence-review-housing-and-health-inequalities-in-london/full-report.pdf>, retrieved on March 28, 2023

Adams, Z., & Füss, R. (2010). Macroeconomic determinants of international housing markets. *Journal of Housing Economics*, 19(1), 38–50. <https://doi.org/10.1016/j.jhe.2009.10.005>

Admin. (2021). Hoyt Model (Sector Model) of Urban Land Use 1939 by Homer Hoyt. *Planning Tank*. <https://planningtank.com/settlement-geography/sector-model-hoyt-model>, retrieved on April 11, 2023

Bank of England. (n.d.). *Bank Rate history and data | Bank of England Database*. <https://www.bankofengland.co.uk/boeapps/database/Bank-Rate.asp>, retrieved on March 15, 2023

Barker, K. M. (2008). Planning policy, planning practice, and housing supply. *Oxford Review of Economic Policy*, 24(1), 34–49. <https://doi.org/10.1093/oxrep/grn001>

Barker, K. (2004). Review of Housing Supply. *Barker Review Final Reports*.
http://www.andywrightman.com/docs/barker_housing_final.pdf, retrieved on March 11, 2023

Barnes, O. (2022, December 28). Inside London's rental crisis. *Financial Times*.
<https://www.ft.com/content/4a7a19b7-0f17-4702-9949-e0ff6f4f605e>, retrieved on March 16, 2023

Bet, M. (2022, October 30). Government committed to 300,000 homes per year target – Gove. *The Independent*. <https://www.independent.co.uk/news/uk/michael-gove-government-liz-truss-office-for-national-statistics-laura-kuenssberg-b2213708.html>,
retrieved on March 15, 2023

Booth, R. (2020, December 3). Number of affordable homes built in England barely rises. *The Guardian*. <https://www.theguardian.com/society/2020/dec/03/number-of-affordable-homes-built-in-england-barely-rises>, retrieved on March 15, 2023

Bosetti, N., Sims, S., & Travers, T. (2017). Housing and inequality in London. *ResearchGate*. <https://doi.org/10.13140/RG.2.2.22618.75203>

Boughaba, M. (2019). Social and Affordable Housing in the UK: Overcoming the Housing Shortage with Better-Quality Houses and Healthier Environments. *Nottingham*.
https://www.academia.edu/38423950/Social_and_Affordable_Housing_in_the_UK_Overcoming_the_Housing_Shortage_with_Better_Quality_Houses_and_Healthier_Environments, retrieved on March 14, 2023

Bourne, J. W. (2019). Empty homes: mapping the extent and value of low-use domestic property in England and Wales. *Palgrave Communications*, 5(1).
<https://doi.org/10.1057/s41599-019-0216-y>

Building the homes we need: a programme for the 2015 Government (2014). KPMG.
<https://assets.kpmg.com/content/dam/kpmg/pdf/2015/03/building-the-homes-we-need.pdf>, retrieved on April 8, 2023

Bramley, G. (2007). The Sudden Rediscovery of Housing Supply as a Key Policy Challenge. *Housing Studies*, 22(2), 221–241.
<https://doi.org/10.1080/02673030601132847>

Bramley, G., & Leischman, C. (2005). Planning and housing supply in two-speed Britain: modelling local market outcome. *Sage Journals*, 42(12), 2213–2244.
<https://doi.org/10.1080/00420980500331934>

Bulman, M. (2018, May 18). UK facing its biggest housing shortfall on record with backlog of 4m homes, research shows. *The Independent*.
<https://www.independent.co.uk/news/uk/home-news/housing-homeless-crisis-homes-a8356646.html>, retrieved on March 15, 2023

Burgess, G., Monk, S., & Whitehead, C. (2010). How can the planning system deliver more housing? York: *Joseph Rowntree Foundation*.

Case. (n.d.). *CASE | Research | Understanding the links between inequality and poverty | Policy Toolkit | Housing | New affordable homes and social housing*.
https://sticerd.lse.ac.uk/case/new/research/Inequalities_and_Poverty/policy-toolkit/housing-affordable-homes.asp, retrieved on April 12, 2023

Chetan, K., Rangappa, S., & Suchitra, S. (2021). Analysing Interlinkages between Financial and Real Estate Sector in the aftermath of COVID-19's Second wave: An Econometric Approach using VECM model. *Munich Personal RePEc Archive*.
https://mpra.ub.uni-muenchen.de/112440/1/MPRA_paper_112440.pdf

Clare, S. (2020). Cause area report: housing affordability in London. *Founders Pledge*.
<https://thinkhouse.org.uk/site/assets/files/2067/fp0420.pdf>, retrieved on April 6, 2023

Collinson, P. (2022, September 12). Help to buy or shared ownership: which is best for homebuyers in England? *The Guardian*.
<https://www.theguardian.com/money/2022/sep/12/help-to-buy-or-shared-ownership-best-england>, retrieved on March 15, 2023

Croal, E. a. P. (2023). Average household income, UK - Office for National Statistics. *www.ons.gov.uk*.
<https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/householddisposableincomeandinequality/financialyearending2022>, retrieved on May 10, 2023

Economics Observatory. (2022, June 28). *What next for the UK housing market?* - *Economics Observatory*. <https://www.economicsobservatory.com/what-next-for-the-uk-housing-market>, retrieved on March 12, 2023

Economics, Real Estate and the Supply of Land. (n.d.). Google Books.
https://books.google.at/books?hl=en&lr=&id=lt4kTjS15t8C&oi=fnd&pg=PP1&dq=real+estate+microeconomics&ots=X1VNf8HHrq&sig=tbftptiarQKVOsBmS5aMAD0xtcvg&redir_esc=y#v=onepage&q=real%20estate%20microeconomics&f=false

Eine besondere Gemeindesteuer für Leerstand oder für den Verzicht auf den Bau bestimmter Gebäude zahlen. (2015, February 11). <https://guichet.public.lu/de/citoyens/impots-taxes/bien-immobilier/terrain-bien-immobilier/payer-taxe-inoccupation.html> retrieved on May 21, 2023

Evans, A. (2004). Economics and Land Use Planning. *Blackwell Publishing*, 85(1), 165–167. <https://doi.org/10.1111/j.1435-5957.2006.000663.x>

Google Books. (n.d.). https://www.google.at/books/edition/Economics_Real_Estate_and_the_Supply_of/I4kTjS15t8C?hl=en&gbpv=1&dq=neoclassical+rent+theory&pg=PA13&printsec=frontcover

Government Digital Service. (2015). Right to Buy: buying your council home. *GOV.UK*. <https://www.gov.uk/right-to-buy-buying-your-council-home/discounts>, retrieved on March 15, 2023

Government Digital Service. (2022a). Shared ownership homes: buying, improving and selling. *GOV.UK*. <https://www.gov.uk/shared-ownership-scheme>, retrieved on March 29, 2023

Government Digital Service. (2022b). Apply for a Help to Build: Equity Loan. *GOV.UK*. <https://www.gov.uk/apply-for-help-to-build-equity-loan>, retrieved on May 16, 2023

Greenlee, A., & Wilson, B. (2016). Where Does Location Affordability Drive Residential Mobility? An Analysis of Origin and Destination Communities. *Housing Policy Debate*, <https://doi.org/10.1080/10511482.2016.1163611>

Grünbacher, U. (2022, May 9). Umstritten: Wo die Steuer auf leer stehende Wohnungen kommt. *kurier.at*. <https://kurier.at/wirtschaft/immobiz/umstritten-wo-die-steuer-auf-leer-stehende-wohnungen-kommt/401997828>, retrieved on May 20, 2023

Guler, N. (2023, April 18). *What is Affordable Housing and Why is it so Important to London?* Urbanist Architecture. <https://urbanistarchitecture.co.uk/what-is-affordable-housing-and-why-is-it-so-important-to-london/>, retrieved on March 11, 2023

Hamari, J., & Ukkonen, A. (2016). The Sharing Economy: Why People Participate in Collaborative Consumption. *Uta-fi*. https://www.academia.edu/27391889/The_Sharing_Economy_Why_People_Partici_pate_in_Collaborative_Consumption, retrieved on March 25, 2023

Harding, C., Cottell, J., and Urquijo, D. (2022). “Levelling Up in London”, Centre for London. https://centreforlondon.org/wp-content/uploads/2022/06/CFL_LevellingUp_Phase1.pdf, retrieved on March 15, 2023

Hassan, A., Abdullah, Y., Omar, D., & Danial, M. (2021). Location housing affordability index: analyzing the relationships. *ResearchGate*, 19(15), 41–52, <https://doi.org/10.21837/pm.v19i15.923>

Harter-Dreiman, M. (2004). Drawing inferences about housing supply elasticity from house price responses to income shocks. *Journal of Urban Economics*, 55(2), 316–337. <https://doi.org/10.1016/j.jue.2003.10.002>, retrieved on March 18, 2023

Heathcote, E. (2022, October 1). From Mozart to modernism: an architectural adventure in Vienna. *Financial Times*. <https://www.ft.com/content/f259f187-6cd4-4152-9d0b-5f019e67fccf>, retrieved on May 15, 2023

Herger, D. (2017, May 17). Gemeindewohnung in Wien: Zehn Fragen zum günstigen Wohnen im Gemeindebau. *vienna.at*. <https://www.vienna.at/gemeindewohnung-in-wien-zehn-fragen-zum-guenstigen-wohnen-im-gemeindebau/5263060>, retrieved on May 20, 2023

Hilber, C., & Vermeulen, W. (2014). The impact of supply constraints on house prices in England. *The Economic Journal*, 126(591), 358–405. <https://doi.org//10.1111/eoj.12213>

Hinchliffe, R. (2023). Over 676,000 empty homes ‘a national disgrace’ says leader. *Financial Times Adviser*. <https://www.ftadviser.com/mortgages/2023/02/24/over-676-000-empty-homes-a-national-disgrace-says-lender/>, retrieved on May 15, 2023

Holman, N., Fernández-Arrigoitia, M., Scanlon, K., & Whitehead, C. (2015). Housing in London: addressing the supply crisis. *Knowledge Transfer: LSE*.

Housing Markets, Financial Stability and the Economy. (2015, September 28). IMF. <https://www.imf.org/en/News/Articles/2015/09/28/04/53/sp060514>, retrieved on March 25, 2023

Housing tenure over time. (n.d.). Trust for London. <https://trustforlondon.org.uk/data/housing-tenure-over-time/>, retrieved on May 18, 2023

IBISWorld - Industry Market Research, Reports, and Statistics. (n.d).
<https://www.ibisworld.com/uk/bed/construction-materials-price-index/44255/>,
retrieved on April 15 2023

Imagine a Renters' Utopia. It Might Look Like Vienna. | *Portside.* (2023, May 25).
Portside. <https://portside.org/2023-05-25/imagine-renters-utopia-it-might-look-vienna>,
retrieved on April 15, 2023

Inner London Salary – wages and hours worked. (n.d.). *Varbes.*
<https://www.varbes.com/salary/inner-london-salary>, retrieved on April 20, 2023

Inman, P. (2017, November 28). Housing crisis: more than 200,000 homes in England lie empty. *The Guardian.* <https://www.theguardian.com/society/2017/apr/20/over-200000-homes-in-england-still-lying-empty-despite-housing-shortages>, retrieved on March 10, 2023

Kholodilin, K. A. (2022, January 4). *Lectures on housing economics: A European text.*
https://kkholodilin.github.io/Test_HE/index.html

Kilroy, J. (2017). Better planning for housing affordability. *RTPI.*
<https://www.rtpi.org.uk/media/1926/betterplanninghousingaffordability-positionpaper2017.pdf>, retrieved on March 20, 2023

Klien, M., Huber, P., Reschenhofer, P., Gutheil-Knopp-Kirchwald, G., and G. Kössl (2023). “Die preisdämpfende Wirkung des gemeinnützigen Wohnbaus in Österreich“, *Österreichisches Institut für Wirtschaftsforschung.*

Lane, B. M. (n.d.). *Empty homes could ease housing shortage - how could investors help?* Property Investor Today. <https://www.propertyinvestortoday.co.uk/breaking->

[news/2022/2/empty-homes-could-ease-housing-shortage--how-could-investors-play-their-part](#), retrieved on April 15, 2023

Lang, K. (2022). Lessons from Vienna: a housing success story 100 years in the making. *Financial Times*. <https://www.ft.com/content/05719602-89c6-4bbc-9bbe-5842fd0c3693>, retrieved on May 20, 2023

Laskowska, E., & Torgomyan, S. (2016). The Role of Government in the Housing Market. *SGGW*, 16(1), 205—212

Lodha, S. (2021, September 17). Commercial Vs Residential Real Estate Investing. *Forbes Advisor INDIA*. <https://www.forbes.com/advisor/in/investing/commercial-vs-residential-real-estate-investing/>, retrieved on March 22 2023

London Government Directory. (n.d.). <https://directory.londoncouncils.gov.uk>, retrieved on March 26, 2023

London's Housing Submarkets. (2014). *GLA Economics*. https://www.london.gov.uk/sites/default/files/housing_submarkets_report_for_web.pdf, retrieved on April 21, 2023

London, UK Metro Area Population 1950-2023. (n.d.). MacroTrends. <https://www.macrotrends.net/cities/22860/london/population>, retrieved on March 15, 2023

MacFarlane, I. (2021). Areas with the most consistent house price growth in the last decade. *Show House*. <https://www.showhouse.co.uk/news/areas-with-the-most-consistent-house-price-growth-in-the-last->

[decade/#:~:text=London%20property%20values%20have%20climbed,rate%20of%20growth%20exceeding%205%25, retrieved on March 12, 2023](#)

Meen, G. (2019). Tackling the UK housing crisis: is supply the answer? *UK Collaborative Centre for Housing Evidence*. https://housingevidence.ac.uk/wp-content/uploads/2019/08/190820-Geoff-Meen-comments_final-1.pdf, retrieved on May 2, 2023

Minoguchi, T. (1973). Reconsideration of the Theory of Rent. *Hitotsubashi Journal of Economics*, 13(2), 29–36. <https://doi.org/10.15057/8014>

Minton, A. (2022, January 21). Who caused the UK's housing crisis? *Financial Times*. <https://www.ft.com/content/3fbd23e9-1330-4514-a849-5a0d7577d167>, retrieved on March 15, 2023

Muellbauer, J. (2018). Housing, debt and the economy: a tale of two countries. *National Institute Economic Review*, 245, R20–R33. <https://doi.org/10.1177/002795011824500112>

Muellbauer, J., & Murphy, A. (2008). Housing markets and the economy: the assessment. *Oxford University Press*, 24(1), 1–33. <https://doi.org/10.1093/oxrep/grn011>.

Muth, R. (1969). *Cities and Housing*. *University of Chicago Press*.

Nall, C., Elmendorf, C. S., & Oklobdzija, S. (2022). Folk Economics and the Persistence of Political Opposition to New Housing. *Social Science Research Network*. <https://doi.org/10.2139/ssrn.4266459>

NEB Lab: Regulatory analysis and experimentation. (n.d.). New European Bauhaus. https://new-european-bauhaus.europa.eu/get-inspired/inspiring-projects-and-ideas/neb-lab-regulatory-analysis-and-experimentation_en, retrieved on May 13, 2023

New European Bauhaus Prizes 2023. (n.d.). <https://prizes.new-european-bauhaus.eu/>, retrieved on May 20, 2023

New European Bauhaus: new actions and fundings to link sustainability to style and inclusion. (2021). *European Commission – Press Releas.* https://ec.europa.eu/commission/presscorner/detail/en/IP_21_4626, retrieved on May 20, 2023

Nigeria, G. (2022). Government should focus on providing decent, affordable housing, says Lawanson. *The Guardian Nigeria News - Nigeria and World News.* <https://guardian.ng/property/government-should-focus-on-providing-decent-affordable-housing-says-lawanson/>, retrieved on April 15, 2023

North, A. (2023). UK House Price Index - Office for National Statistics. www.ons.gov.uk. <https://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/housepriceindex/november2022>

Osborne, H. (2017a, November 28). Home ownership in England at lowest level in 30 years as housing crisis grows. *The Guardian.* <https://www.theguardian.com/society/2016/aug/02/home-ownership-in-england-at-lowest-level-in-30-years-as-housing-crisis-grows>, retrieved on March 14, 2023

Osborne, H. (2017b, November 28). Home ownership in England at lowest level in 30 years as housing crisis grows. *The Guardian*. <https://www.theguardian.com/society/2016/aug/02/home-ownership-in-england-at-lowest-level-in-30-years-as-housing-crisis-growsm>, retrieved on March 15, 2023

Over 676,000 empty homes ‘a national disgrace’, says lender. (2023, February 24). FTAdviser. <https://www.ftadviser.com/mortgages/2023/02/24/over-676-000-empty-homes-a-national-disgrace-says-lender/>, retrieved on March 15, 2023

Park, J. (2014). Land Rent Theory Revisited. *Guilford Press*, 78(1), 88–109, <https://doi.org/10.1521/viso.2014.78.1.88>

Patel, U. (2022). Update: what next for the UK housing market? *Economics Observatory*. <https://www.economicsobservatory.com/update-what-next-for-the-uk-housing-market>, retrieved on April 5, 2023

Petris, P., Dotsis, G., & Alexakis, P. (2020). Bubble tests in the London housing market: A borough level analysis. *International Journal of Finance & Economics*, 27(1), 1044–1063. <https://doi.org/10.1002/ijfe.2199>

Piper, J. (2021). The Right to Buy – a contributor to the housing crisis — Advice for Renters. *Advice for Renters*. <https://adviceforrenters.org/news/the-right-to-buy-a-contributor-to-the-housing-crisis>, retrieved on March 12, 2023

Pitcher, G. (2023, January 6). London ‘at heart of housing crisis’ as number of private renters passes 1 million. *Evening Standard*. <https://www.standard.co.uk/homesandproperty/renting/census-private-rent-landlords-london-b1051143.html>, retrieved on March 20, 2023

Peter, J. and Rakos, M. (2022), "Bezahlbares Wohnen - Darum sind die Mieten in Wien noch so günstig", *Spiegel Ausland*. <https://www.spiegel.de/ausland/bezahlbares-wohnen-wie-wien-zum-groessten-vermieter-europas-wurde-a-7b980817-c992-450f-8263-8372ccbb5dba>, retrieved on May 27, 2023

Porter, T. (2023). How interest rates and economic factors impact housing. *Bankrate*. <https://www.bankrate.com/real-estate/interest-rates-housing/>, retrieved on April 27, 2023

Prime London house prices – Q1 2023. (2023, May 22). https://www.savills.co.uk/research_articles/229130/345923-0, retrieved on April 15 2023

Quigley, J., & Rosenthal, L. (2005). The effects of land use regulation on the price of housing: what do we know? What can we learn? *A Journal of Policy Development and Research*, 8(1), 69–137. <https://www.huduser.gov/periodicals/cityscape/vol8num1/ch3.pdf>

Real estate activities. (2014). In *OECD eBooks* (pp. 287–297). <https://doi.org/10.1787/9789264220676-14-en>

Real Estate Economics. (n.d.). Google Books. https://books.google.at/books?id=L808vawFpJkC&printsec=frontcover&dq=real+estate+economics+book&hl=en&sa=X&ved=2ahUKEwiOs_3W_br9AhU7bPEDHdhGCbkQ6AF6BAgHEAI#v=onepage&q=real%20estate%20economics%20book&f=false

Residential approvals dashboard – London Datastore. (n.d.). <https://data.london.gov.uk/dataset/residential-approvals-dashboard>, retrieved on April 28, 2023

Residential completions dashboard – London Datastore. (n.d.).
<https://data.london.gov.uk/dataset/residential-completions-dashboard>, retrieved on
April 28, 2023

Sachsen-Anhalt. (2019). Bauhaus Dessau and the Movement of Modernism.
Investitions- und Marketinggesellschaft Sachsen-Anhalt.
<http://mb.cision.com/Main/16943/2646544/927895.pdf>, retrieved on May 29, 2023

Salwati, N., & Wessel, D. (2022, August 12). How does the government measure
inflation? *Brookings.* [https://www.brookings.edu/blog/up-front/2021/06/28/how-
does-the-government-measure-inflation/](https://www.brookings.edu/blog/up-front/2021/06/28/how-does-the-government-measure-inflation/), retrieved on May 15, 2023

Savills UK | A brief history of the UK housing market 1952-2022. (2023, May 22).
[https://www.savills.co.uk/landing-pages/a-brief-history-of-the-uk-housing-market-
1952-2022.aspx](https://www.savills.co.uk/landing-pages/a-brief-history-of-the-uk-housing-market-1952-2022.aspx), retrieved on March 2, 2023

Simic, N. (n.d.). How do rising interest rates affect the construction industry? *Bridgit.*
[https://gobridgit.com/blog/interest-rates-affect-
construction/#:~:text=Although%20interest%20rate%20increases%20can,affecting%
20the%20building%20material%20market](https://gobridgit.com/blog/interest-rates-affect-construction/#:~:text=Although%20interest%20rate%20increases%20can,affecting%20the%20building%20material%20market), retrieved on May 22, 2023

Simons, H. and Tielkes, C. (2020). „Wohnungsmarkt Wien – Eine wohnungspolitische
Analyse aus deutscher Sicht“, *Empirica Institute*, Berlin.

Snelling, C., Colebrook, C., & Murphy, L. (2016). Homesharing & London’s Housing
Market. *Institute for Public Policy Research.*
[https://www.ippr.org/files/publications/pdf/homesharing-and-london-housing-
market-dec16.pdf](https://www.ippr.org/files/publications/pdf/homesharing-and-london-housing-market-dec16.pdf)

Stacey, K. (2023, February 26). England's new housing supply likely to fall to lowest level in decades, study says. *The Guardian*. <https://www.theguardian.com/society/2023/feb/26/england-new-housing-housebuilding-planning-policy>, retrieved on March 15, 2023

Standard, E. (2014, March 21). The ghost town of the super-rich: Kensington and Chelsea's "buy-to-leave" phenomenon. *Evening Standard*. <https://www.standard.co.uk/lifestyle/london-life/the-ghost-town-of-the-superrich-kensington-and-chelsea-s-buytoleave-phenomenon-9207306.html>, retrieved on March 15, 2023

Stella Lange. (2022, March 1). <https://www.stellalange.co.uk/news/empty-property-issue>, retrieved on April 26 2023

Summers, A. (2023, March 24). London travel passes most expensive of 45 global cities, new report finds. *City Monitor*. <https://citymonitor.ai/transport/london-travel-passes-most-expensive-new-report>, retrieved on March 15, 2023

Tax Haven Money in London Real Estate. (n.d.). Trust for London. <https://trustforlondon.org.uk/research/tax-haven-money/>, retrieved on March 23, 2023

The UK Housing Crisis – Are Councils Missing An Obvious Trick? • Capacitygrid. (2022, March 21). <https://www.capacitygrid.com/2022/03/21/uk-housing-crisis/>, retrieved on April 15, 2023

Tower Hamlets Corporate Research Unit (2018), "Household Income 2018 – Borough Statistics", Household_Income_2018_Factsheet.pdf (towerhamlets.gov.uk), retrieved on March 26, 2023

Tucker, P. (2022). Quantitative easing, monetary policy implementation, and the public finances. In *Institute for Fiscal Studies*.
<https://ifs.org.uk/publications/quantitative-easing-monetary-policy-implementation-and-public-finances>, retrieved on March 22, 2023

UK Consumer Price Index. (n.d.). YCharts.
https://ycharts.com/indicators/uk_consumer_price_index_yearly, retrieved on May 20, 2023

UK House Price Index England. (2023). GOV.UK. <https://www.gov.uk/government/statistics/uk-house-price-index-for-december-2022/uk-house-price-index-england-december-2022>, retrieved on April 20, 2023

UK Parliament (2023), "Future of Social Housing", debated in the House of Commons on 21 April 2023. <https://hansard.parliament.uk/commons/2023-04-19/debates/C281CAB1-B83C-4577-AA1A-962B1D3A8909/FutureOfSocialHousing>, retrieved on May 18, 2023

UK House Price Index – London Datastore. (n.d.). <https://data.london.gov.uk/dataset/uk-house-price-index>, retrieved on May 18, 2023

UK House Price Index England: September 2019. (2019, October 30). GOV.UK. <https://www.gov.uk/government/statistics/uk-house-price-index-england->

[september-2019/uk-house-price-index-england-september-2019](#), retrieved on May 17, 2023

UK House Price Index England: September 2021. (2021, November 9). GOV.UK. <https://www.gov.uk/government/statistics/uk-house-price-index-england-september-2021/uk-house-price-index-england-september-2021>, retrieved on May 17, 2023

West, E. (2023, March 8). The myth of London's empty homes. *By Ed West*. <https://edwest.substack.com/p/the-myth-of-londons-empty-homes> retrieved on May 20, 2023

What makes housing markets so volatile? (2020, February 5). World Economic Forum. <https://www.weforum.org/agenda/2015/02/what-makes-housing-markets-so-volatile/>, retrieved on March 10, 2023

Whitehead, C. M. E. (2007). Planning Policies and Affordable Housing: England as a Successful Case Study? *Housing Studies*, 22(1), 25–44. <https://doi.org/10.1080/02673030601024580>

Wilson, W., & Barton C. (2023). Tackling the under-supply of housing in England. *House of Commons Library*. <https://researchbriefings.files.parliament.uk/documents/CBP-7671/CBP-7671.pdf>, retrieved on March 11, 2023

Wochenblatt. (2021, July 2). Steuer auf Leerstand - [wochenblatt.es](https://www.wochenblatt.es). <https://www.wochenblatt.es/spanien/steuer-auf-leerstand/?v=d3dcf429c679>

Wohnberatung Wien (2023), <https://wohnberatung-wien.at/>, retrieved on May 15, 2023

Wohnfonds Wien (2023), <https://www.wohnfonds.wien.at/>, retrieved on May 17, 2023

Wohnservice Wien (2023). <https://wohnservice-wien.at/service/wohnfonds-wien>, retrieved on April 15, 2023

Appendix

Appendix 1: locational analysis data across London boroughs

Borough	Travel time to Central London (mins)	Average house price (£)	Median household income (£)
Barking and Dagenham	46	294,375	22,008
Barnet	55	536,388	34,077
Bexley	47	339,115	28,441
Brent	52	491,427	28,637
Bromley	46	444,953	33,139
Camden	20	897,536	35,917
Croydon	31	382,845	27,406
Ealing	41	493,773	30,721
Enfield	49	398,775	28,043
Greenwich	37	397,683	26,694
Hackney	44	589,748	28,097
Hammersmith & Fulham	39	760,987	37,102
Haringey	41	584,032	29,910
Harrow	40	465,983	31,799
Havering	71	365,345	29,009
Hillingdon	77	417,976	29,305

Hounslow	64	399,226	29,310
Islington	31	676,428	33,747
Kensington and Chelsea	30	1,203,181	42,771
Kingston upon Thames	44	501,491	35,726
Lambeth	27	524,725	30,470
Lewisham	37	426,145	26,715
Merton	52	516,599	32,846
Newham	49	363,126	23,426
Redbridge	48	422,121	29,715
Richmond upon Thames	40	680,250	41,084
Southwark	17	525,211	29,063
Sutton	52	380,544	31,580
Tower Hamlets	37	479,171	29,937
Waltham Forest	48	442,670	27,753
Wandsworth	43	627,274	37,601
City of Westminster	22	959,998	40,594

Table 6: Data for the locational analysis across London boroughs

Appendix 2: time series analysis data

Year	Aver. house price in London (£)	Consumer price index	Construction price index	Interest rate	Resid. approvals	Resid. completions
2005	235329	78.1		4.5	55415	32562
2006	251281	79.9		4.875	53041	26138
2007	287114	81.8		5.5	57645	33326
2008	282959	84.7		4.15	80915	28133
2009	257854	86.6		1	47613	32146
2010	284543	89.4	77.6	0.5	46079	28354
2011	290551	93.4	88.3	0.5	57607	25385
2012	303927	96.1	89.3	0.5	87357	29621
2013	329168	98.5	90.3	0.5	44301	28712
2014	386124	100	90.7	0.5	72213	26824
2015	425134	100	90.9	0.5	92504	31684
2016	467503	100.7	88.7	0.25	79974	38444
2017	480247	103.4	90.1	0.5	81798	44065
2018	477855	105.9	94.5	0.75	79599	31052
2019	471366	107.8	99.1	0.75	83803	37207
2020	483661	108.7	100	0.175	61523	32779
2021	503161	111.6	102.1	0.25	47279	32961

2022	530481	121.7	121.1	1.75	42648	40208
------	--------	-------	-------	------	-------	-------

Table 7: Data for the time series analysis