UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

The Apartment Market and the Rent Regulation

A Study on How the Regulation Affect the Market of Apartments in Gothenburg

Bachelor Thesis in Economics

Department of Economics

Supervisor:

Aico van Vuuren

Authors:

Fredrika Poole Bonnier

Maria Voigt

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Abstract

This study aims to investigate whether the rental regulation in Gothenburg fulfill its purpose, by comparing difference in terms of rent levels for three different types of contract.

The first one is owner occupied cooperative apartment that require a membership in the cooperative. An owner occupied cooperative apartment can be sold at the housing market and the owner buys a share of the cooperative, and the right to use the apartment. The second contract type is rental apartment, which is a regulated market. The third is secondary rental apartment contracts which is regulated but also exists on the black market.

The results from this study shows a significant difference in monthly cost for apartments depending on area and contract type in Gothenburg. The results indicate that the rent for apartments on the primary market is significantly lower than the other contracts, indicating that the regulated primary rent is below the equilibrium rent. This cause problem in form of a growing black market, discrimination and a trend to convert rental apartments into owner occupied cooperative apartments.

Keywords: Contract type, rental apartments, Gothenburg, regulated market, owner occupied cooperative apartments

Definitions

Owner occupied cooperative apartment

Apartments sold at a free market where the buyer owns a share of the cooperative and the right to use the apartment

(Primary) Rental apartment

Apartments for rent on a regulated market

Secondary rentalapartment

Exist legally and regulated for all markets but also on the black market

Owner occupied apartment

A form of housing since 2009. Same rules as for other real estate

Cooperative rental apartment

A mix between owner occupied cooperative apartment and rental apartment

Locally negotiated rents

Negotiated rents on the regulated rental apartment market (2.4.1)

Temporary fixed rents

Negotiated rents for newly built rental apartments. Allowed to be fixed for fifteen years (2.4.3)

Quality rents

Rents determined based on quality and user value on the rental market (2.4.2)

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Figures and tables

1. Introduction

This chapter describes the background to the housing market today for rental apartments and cooperative apartments. It continues with a problem discussion that leads to the research question that this study aims to answer, and also to its purpose.

1.1 Background to the apartment market

The market for tenancies affects a great deal of people and is a regulated market in Sweden. One of the reasons is that some security of tenure is needed. A third of the population in Sweden live in rental apartments and it is difficult to compare Sweden with other countries since the way rents are regulated are unique and complex. Sweden also has regional differences since the negotiations have different outcomes between the different regions (Boverket, 2014).

The rental apartment market is different from other markets in many different ways. There are numerous preferences and people tend to not only choose depending on their income. Public transportation, region and an investment perspectives are some of the factors that affect tenants' choices (Boverket, 2014).

There are four forms of tenure in Sweden; owner occupied cooperative apartment, rental apartment, owner occupied apartment and cooperative rental apartment. The owner occupied cooperative apartment requires a membership in a cooperative. An owner occupied cooperative apartment can be sold at the housing market and the owner buys a share of the cooperative, and the right to use the apartment.
The rental apartments are typically rented from landlords. It is also possible to rent someone's private apartment but that does not give the same security of tenure (Boverket.se, 2014).

The most common types of apartments in Sweden are rental apartments and owner occupied cooperative apartment. The owner occupied cooperative apartment can be traded on an unregulated market while the market for rental apartments are regulated. Rents for the rental apartments can be determined by locally negotiated rents, temporary fixed rents and quality rents or by the landlord alone (Boverket, 2014).

1.2 Problem discussion

All kinds of regulations have affected the society and regulations are considered necessary since the housing market affects many people. Criticism has been addressed towards the Swedish rent setting model by IMF, OECD and the European Commission (Boverket, 2014).

Today, compared to the 90s, there are around 100 000 fewer rental units. A great part of the decrease can be explained by the conversion to owner occupied cooperative apartment, mainly in Stockholm (Boverket, 2014). If the rental market was unregulated the number of conversions might get affected, and also the supply for rental apartments.

Many factors affect the rental market, and some of them are; tax rules, willingness to pay by tenants, competitiveness on the market and the cost for building and land (Boverket, 2014). Many things also affect the owner occupied cooperative apartment market and the housing shortage might affect the prices on owner occupied cooperative apartment.

The share of the apartments that are owner occupied cooperative apartments has increased (Boverket, 2014) and the prices have risen 11.5 percent the last 12 months (Valueguard, 2016). The population in Gothenburg had increased by 55 000 people the last ten years according to the Swedish Union of Tenants. Since the amount of built rental apartments has not been sufficient, it has resulted in long queues, unsafe secondary market, black trade with contracts and high prices on owner occupied cooperative apartments (Hyresgästföreningena). It is therefore interesting to examine how the markets for apartments affect each other.

1.3 Purpose

This study aims to answer how the regulation affect the market on apartments in Gothenburg. Does the regulation fulfill its purpose or does it cause side effects on the market.

1.4 Research question

Does the regulation on the primary rental market fulfill its purpose and how does the regulation affect the apartment market in Gothenburg?

2. Theory

To be able to answer the research question of this paper the relevant theories are presented in this chapter.

2.1 Rational Consumer Choice

Rational consumers who actively weigh benefits and preferences to each other are assumed. If the sacrifice of a resource, input or change is greater than the benefit the consumer receives, the consumer abstains. The consumer is assumed to distinguish costs and revenues, and then to choose the alternative that receives the maximum benefit (Eklund, 2013, s 31-33). The consumer is assumed to have an income that is given to face fixed prices. Income and prices together form the consumer's budget constraint. In this model we assume the consumer's preferences to be given and designed in the best way to satisfy the consumer. To solve the consumer budgeting problem, we need a preference ordering, where the consumer takes into account all possible bundles of goods and rank them by preference (Frank & Cartwright 2013, s 79). This model assumes perfect information and that the consumer has a good knowledge available options (Eklund, 2013, s 31-33).

2.2 The market theory for apartments

In a free market the demand for apartments is due to which purchasing power the consumers have, what their preferences are and what options there are on the market. The supply side is determined by how many homes there are on the market at a particular time (Eklund 2013, 42-45). The supply side of the housing differs from classical markets because the supply in the short time period is likely to be limited. The supply side of the housing market in the short run is inelastic and is illustrated in the graph below as a steep horizontal line. This is believed to be because the building of apartments is a time consuming process, which limit the supply in the short term. Although in the long term, the supply-side will be price elastic and equal a classic market. The classic market theory model does not describe reality completely, but manages to easily depict important aspects of reality (Eklund 2013, 42-49).
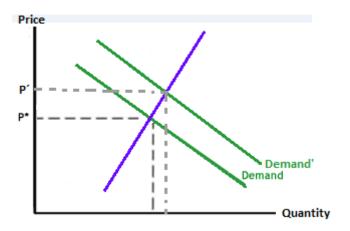
Figure 1*Supply and demand for apartment markets, short term* (Eklund, 2013)

Equilibrium is reached when supply is equal to demand. At this point, the marginal benefit equals the marginal sacrifice and the return equals the marginal costs (Eklund, 2013, s. 47-49) The market for owner occupied cooperative apartments as well as the secondary market is assumed to be free markets. Demand and supply and will always seek equilibrium. Increasing demand for apartments will shift the demand curve in the model to the right, which contributes to the equilibrium price rises. In this specific situation we assume the increased demand is due to an increased number of consumers and not due to increased revenues.

2.3 Regulated Rental market

This market differs from the housing market in the way that the market is regulated. In other words, the rent charged for an apartment of a certain standard is limited. The market is regulated by political intervention to avoid the equilibrium price be too high. The supply curve will have a steep slope, as in the market of owner occupied cooperative apartment. In a free market the equilibrium price will be at the point, where the demand curve intersects the supply curve. But due to political interventions the rent will be set at a fixed level, this level is below the equilibrium price. This means that demand will increase, as more people are willing to pay the required price. The regulated rent also means that it will be unprofitable for some landlords to maintain rental units, which means that the supply of rental housing will fall. This leads to excess demand, the supply is not enough to satisfy the demand and we will see a shortage of apartments. The idea is to ensure that everyone can afford somewhere to live. However, the regulation may cause fewer apartments offered, increased prices, high administrative costs and a growing black market (Eklund 2013, 47-49).
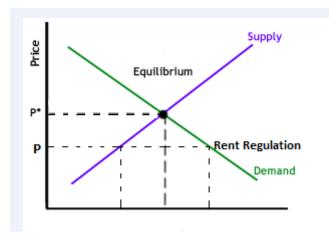
Figure 2 *Regulatedrental market* (Eklund, 2013)

2.4 Determination of rent for rental apartments in Sweden

The Swedish Union of Tenants has more than 500 000 households as members. Their mission is, among others, to negotiate rent, the terms and conditions, and support tenants (Hyresgästföreningen b). Swedish Property Federation has approximately 17 000 members owning 80 000 properties with 700 000 apartments. Most of the property owners that are members has rental apartments for residential purpose, facilities and industrial properties, the rest are cooperative apartments (Fastighetsägarna).

2.4.1 Locally negotiated rents

Locally negotiated rents should result in corresponding prices for similar apartments. The aim is to create conditions for a reasonable rental development with fair rents and security for the consumers. The purpose is to protect consumers from unreasonable high rents that would force tenants to move because one could not afford to pay the rent (Hyresgästföreningen, 2013). However, one can now see that the locally negotiated rents has created a situation where the market is not in equilibrium and there is currently a housing shortage propagation. As the demand for rental apartments is greater than the supply, it creates demand surplus of rental properties, causing housing shortages and long waiting lists. A great demand surplus also means that there are consumers willing to pay higher prices for rental apartments than the regulation allows. This has in turn led to an extensive secondary and third market and a growing black market. Another consequence of rent control is that the number of rental units may decrease because in some cases it is unprofitable to hold rental apartments and thus

convert them into owner occupied cooperative apartment. Converting apartments to owner occupied cooperative apartment has become a trend (Axelsson C, 2005).

2.4.2 Quality rents

On the autumn 2007 all rental apartment properties was inspected with people from both of the negotiating sides. Locally negotiated rents allows the rent to be affected by what the tenants value based on fourteen different factors in four categories; Area, technical qualities of the property, service quality and relationship quality. Since some landlords works with developing quality and relationship. Some are more interested in the investments and the degree of how serious and ambitious they are differing. All of the negotiating parts agree that good quality should carry the right to charge higher rents. The parties do not agree about where the average rental level should lie or other rules for the market. But they now have the same information and idea about how the relationship between the rents should be. Statistics from The Rent Tribunal shows that the number of cases has decreased in Gothenburg, in opposite to before and other cities in Sweden. The benefit of quality rents to society is very large (Wennermark, 2008). Today the Swedish Union of Tenants still works with quality rents in the way described earlier. They have more material and the map with preferences has changed (Appendix 1).

2.4.3 Temporary fixed rents

The temporary fixed rents makes it possible to determine the rent for newly built rental apartments since 1 july 2006 according to 12 kap. 55 c § JB. The purpose is to stimulate the production of rental apartments by allowing a temporary higher rent. The agreement is valid for fifteen years, and after that the apartments are included in the locally negotiated rents (Boverket, 2014).

2.5 The situation today on the rental market

The negotiating about the rent for 2016 started for private landlords at the autumn 2015. They did meet but were not able to agree. Swedish Property Federation did sent an application to The Rent Tribunal with the 43 000 affected apartments in Gothenburg. Swedish Property Federation claims that it is mostly about the rules and negative effects on the market and not about the rent levels itself (Fastighetsägarna, 2016). Erik Elmgren (2016, 15 january) at the Swedish Union of Tenants claims in his debate article that Swedish Property Federation acting irresponsible and odd (Elmgren, 2016, 15 january).

2.5.1 Decrease in number of rental apartments

The share of rental apartment of the total number of apartments has decreased between 1990 and 2012. Apartments are built but the reason for the decrease is the increased number of owner occupied cooperative apartments (Boverket, 2014). In Gothenburg, close to half of the apartments are rented from public housing. If the operators impact with each other that might cause a price leadership and a less competitive market (Boverket, 2014).

2.5.2 Housing shortage

There are two perspectives when it comes to housing shortage; the market perspective and the political perspective. The market perspective defines housing shortage as a consequence of equilibrium above the actual rents. Increased demand partly leads to increased supply, because the supply is not completely price elastic. The political perspective focuses on the needs rather than the demand that represents the consumption norm. Besides the rent setting system and the fact that adjustment to demand takes time, poor competition and the planning process also affect the housing shortage (Boverket, 2014).

2.5.3 Prices today

The latest month the prices in Gothenburg for owner occupied cooperative apartments has increased by 1.1 percent and for the last year 11.5 percent (Valueguard, 2016). According to Swedish broker statistics the prices continues to rise and the latest month the supply for owner occupied cooperative apartment has decreased by 7 percent (Mäklarstatistik, 2016).

2.6 Effects of excess demand

The impact of excess demand on a regulated market can be expected to have two possible outcomes in the market. Thies(2009) The first outcome Thies describe describe is that rent control can lead to undesirable effects in the form of an increased black market, discrimination and quality decrease in the apartment stock. In this situation consumers are willing to pay a higher price than what the market permits, means that the equilibrium price is above the regulated cap. This means that the regulation inhibit market from equilibrium. The market, which always seeks equilibrium, then will circumvent the problem by alternative mechanisms, like black trade, etc.(Thies, 2009).

The second theory Thies describe is about what effects a regulated market can have on an unregulated market. In the article Thies investigate the market on regulated rental prices as well as free market rents for homogenous apartments, in geographic areas where there is full mobility between the sectors. Thies says that when demand exceeds supply in the regulated market, this will create spillover effects on the unregulated market (Thies, 2009).

In equilibrium, the rent for the regulated market equals the rent for the unregulated market equilibrium and the equilibrium rent (Thies, 2009).

$R_c = R_n = Requilibrium$

$R_c = regulated\ sector$

$R_n = unregulated\ sector$

$R = equilibrium\ rent$

Thies (2009) claims that on a restricted market where the restricted price is below the equilibrium price, there will be a demand surplus in the regulated sector. This leads to spillover effects on the unregulated sector, which makes R greater than the regulated rent and the unregulated rent is forced to increase.
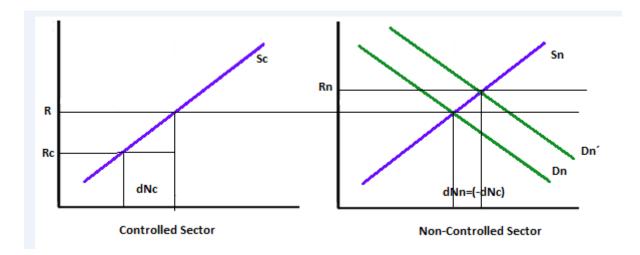
Figure 3 *Regulated market* (Thies, 2009)

Figure 4 *Unregulated market* (Thies, 2009)

The price of a homogenous product differs depending on whether the goods belong to the regulated or unregulated market. Hence, the price of a apartment on the regulated market will be lower than the price of an equivalent apartment on the unregulated market. For the market to accept this difference in price we have to add an additional cost to the regulated price, named as search costs. This means that consumers can access the goods in the regulated market at a lower price; however, they have to pay an additional search cost. The search cost can be defined as the amount of time the consumers spend on searching for an apartment, and the additional costs for choosing the black market (Thies, 2009).

2.7 Black trade

Black trade with attractive rental apartments tend to increase when the regulated price is below the equilibrium price. The National Board of Housing, Building and Planning (Boverket, 2014) estimated that the illegal trading with rental contracts in Stockholm alone amounted to 1.2 billion SEK each year, in a report conducted in 2006. It is difficult to estimate the propagation the black market, and there are often different opinions on the issue. In some places in Sweden there exists an extensive black market, suggesting that the current rent is below the equilibrium rent (Boverket, 2014).

2.8 Efficiency Effects

The Swedish rent setting system do not set a ceiling on rent levels, but in practice the regulation still makes the rent in the most attractive areas to set below the equilibrium price. A side effect of the system is that the supply of rental apartments tends to be below the social

optimum supply created at equilibrium rents. A further side effect is that consumers' willingness to pay when housing is allocated on the basis of other principles and lock-in effect reduces incentives to move. This means in practice that efficiency losses and welfare losses in the form of reduced consumer surplus arise. How big this welfare loss is being possible to estimate with recognized models in the context of national economic welfare theory. Previous studies have been done in the field and calculations have shown efficiency losses in annual billions SEK. The studies show that Stockholm and Gothenburg accounts for about 90 percent of the efficiency loss. When the actual rents are below the equilibrium rents it tend to keep potential tenants with higher willingness to pay out of the market. About 90 percent of the efficiency losses associated with rents are caused by how the stock is exploited (Boverket, 2014).

The rent setting system can also cause problems in a weak housing market, where the system support the rent to be maintained above the equilibrium level. Indicating that the system is characterized by rigidity and poor adaptation to supply and demand conditions in all markets. In other words, the rent setting system cause other negative socioeconomic effects in addition to the more well-known effects that arise in markets with excess demand. A study of how large efficiency losses of this type has never been made. Studies indicate that a rent pressure on the equilibrium price should be in the form of substitute competition from other forms of ownership (Boverket, 2014).

2.9 Limitations

The purpose of the paper is to examine whether the regulation fulfill its purpose, and if not how does the regulation affect the apartment market. The study is limited to investigating the market in Gothenburg. Due to time limitation the study do not take economic variables such as inflation, GDP, real wage growth to a greater extent into account. The study is assumed to provide a reliable indication of how the market looks even if these factors are not taken into account.

2.10 Hypothesis

Thisstudy examineshow the rent regulation affects the apartment market in Gothenburg. Furthermore, the studyexamineswhetherthere is a statisticallysignificantdifference in pricebetween the contracts and if the area has an impact on the rent. Based on this,threehypothesis tests wasformulated :

HypothesisA:

H_0: *Area affect the rent and monthly cost for all contracts*

H_1: *Area do not affect the rent and monthly cost for all contracts*

HypothesisB:

H_0: *The regulated primary rent is lower than the secondary rent and*

  monthly cost for owner occipied cooperative apartments

H_1: *The regulated primary rent is equal to the secondary rent and*

  monthly cost for owner occipied cooperative apartments

HypothesisC:

H_0: *The secondary rent is eqaul to the*

  monthly cost for owner occipied cooperative apartments

H_1: *The secondary rent is not eqaul to the*

  monthly cost for owner occipied cooperative apartments

3. Method

This chapter starts with the process of the literature review followed by how the data was collected. It continues with explaining how the data was processed.

3.1 Process of literature review

The literature should according to Bryman& Bell (2015) be examined critically and be related to the research question of interest in order to find relevant theoretical ideas (s. 14).Also, because it is important to know what is known in the area of interest since before (Bryman& Bell, 2015, s.100). The databases provided by Gothenburg University library and Google Scholar were used. Printed sources provided by the Economics library at Gothenburg university were also used.

When searching for literature some suitable keywords need to be used (Bryman& Bell, 2015, s.116). The keywords that were used in different combinations to find relevant literature in this paper were: rental market, housing market, restricted, housing cooperatives, rental apartments, effect. Some of them were also translated into Swedish to be able to find more literature relating to the Swedish context.

3.2 Data collection

Since the markets for apartments in Sweden consists of many local markets (Boverket, 2014) an area of interest had to be selected. A project that aimed to implement quality rents was initiated in Gothenburg 2007. The project is unique since it is primary driven by the Swedish Union of Tenants and the private landlords, Swedish Property Federation (Wennermark, 2008). Gothenburg was therefore considered an interesting area.

In order to be able to compare areas with each other and to be able to find differences between the areas, the observations were conducted from areas with different characteristics. Biskopsgården and Angered are, according to a report from the Swedish Police (Nationella operativa avdelningen, 2015), the area's most exposed to serious crime and socio economic factors. Other areas with other locations, such as distance from city centre and distance to

water were studied and considered. Since there were few observations areas close to each other with similar characteristics were combined. Six areas of interest were used in this study.

3.2.1 Owner occupied cooperative apartments

The collection of data from the owner occupied cooperative apartment market was collected manually from booli.se. Booli contains information about sold apartments in Sweden. Angered and Biskopsgården did not have as many observations as the other areas so all of the apartments available were collected. Different numbers of rooms in the apartments were considered and the collected data consists of the apartments displayed in the table below.

Owner occupied cooperative apartments in each area based on number of rooms				
	1 room	2 rooms	3 rooms	Total
Centrum	72	90	82	244
Majorna	40	40	40	120
Angered	0	23	16	39
Biskopsgården	21	40	40	101
Frölunda	40	40	40	120
Högsbo	40	40	40	120
Total	213	273	258	744

Table 1 *Displays the number of apartments in each area based on the number of rooms.*

3.2.2 Rental market

The collection of data from the rental market was collected manually. The primary contract apartments where collected from Boplats.se. Boplats is a market place for primary rental contracts in Gothenburg. Information about the secondary contracts was collected from hyrabostad.se. It is a market place for primary rental apartments but also contains secondary rental apartments in Gothenburg. In this paper, some of the contracts can be considered as the black markets which is why the secondary market is called unregulated.

Number of rental apartments based on contract type and number of rooms

	Primary	Secondary
1 Room	27	84
2 Rooms	169	93
3 Rooms	89	55
4 Rooms	20	19
5 Rooms	5	6
6 Rooms	0	5
Total rental apartments	309	262

Table 2 *Displays the number of apartments in each area based on the number of rooms.*

3.3 Multiple Regression Model

In the paper a multiple regression model is used, and the model is an extended model of the single variable regression model and allows us to include additional variables as regressors. The model permits us to estimate the effect on Y_1 of changing one regressor while holding the other constant (Stock & Watson, 2012, s228-229).

$$Y_i = \beta_0 + \beta_1{}^*X_{1i} + \beta_2{}^*X_{2i} + \beta_3{}^*X_{3i} + \beta_k{}^*X_{ki} + u_i, i = 1,,n$$

In order to analyze and compare owner occupied cooperative apartments and rental apartments, it is necessary to predict a value on how much consumers are willing to pay for an apartment of a certain standard. The study looks at a monthly cost and assumes that consumers are equivalent when it comes to renting or buying. In order to compare owner occupied cooperative apartments and rental apartments, the program Stata was used to predict a value on the market value on a rental apartment and the rent paid to the housing cooperative. By predicting values on the market price and the monthly rent, a good opportunity to compare the two markets is given, based on the assumption that the consumer is indifferent about the monthly the cost to be paid as a rent to the landlord or paid to the bank (Stock & Watson, 2012, s228-229).

3.3.1 Logarithms

The independent variable has been logarithmed in order to get a percentage interpretation change in the coefficients. A logarithmic regressions tend to have a better chance of being linear and, homoskedasticity is more likely to hold and normality is often more plausible (Jeffery M. Wooldridge, 2014).

3.4 Regressions Stata
3.4.1Step 1

In all the regressions area, as dummy variables, were used as the independent variables. Number of rooms, square meters and squared square meters were used as control variables. The control variables reduce the error in the variance and make the results more reliable. Variables that increase the r-square, hence reduces the unexplained variance, should be added to the regression (Field, 2014, p479).

Variables used in the regressions			
Variables	Type of Variables	Used in	Explanation
Monthly fee	Dependent Variable Control Variable	Regression 1 Regression 2	The monthly fee for owner occupied cooperative apartments
Sold Price	Dependent Variable	Regression 2	The selling price, 2016 price index
Primary Rent	Dependent Variable	Regression 3	The rent for primary contracts
Secondary Rent	Dependent Variable	Regression 4	The rent for secondary contracts
Rooms	Control Variable	Regression 1,2,3,4 5,6,7	Numbers of rooms in the apartment
Square Meter	Control Variable	Regression 1,2,3,4 5,6,7	The size of the apartment in square meters
Squared Square Meter	Control Variable	Regression 1,2,3,4 5,6,7	Testing for diminishing return of square meters
Majorna	Dummy Variable	Regression 1,2,3,4,5,6,7	The location of the apartment
Angered	Dummy Variable	Regression 1,2,3,4,5,6,7	The location of the apartment
Biskopsgården	Dummy Variable	Regression 1,2,3,4,5,6,7	The location of the apartment
Frölunda	Dummy Variable	Regression 1,2,3,4,5,6,7	The location of the apartment
Högsbo	Dummy Variable	Regression 1,2,3,4,5,6,7	The location of the apartment

Table 3 *Displays the variables used in the regressions*

Regression 1

Log Monthlyfee=β_0+β_1*rooms+β_2*square meter+β_3*squared square meter+β_4*Majorna + $\beta_5 * Angered + \beta_6 * Biskopsgården + \beta_7 * Frölunda + \beta_8 * Högsbo + u_i, i$

The first regression was to run a multiple regression with logarithmic monthly fee as the dependent variable for all owner occupied cooperative apartment in the sample. The coefficients given in the regression was used to predict an expected monthly fee for all the apartments in the collected sample.

Regression 2

Log Sold Price=β_0+β_1*rooms+β_2*square meter+β_3*squared square meter+β_4*monthlyfee + +5$_4$*Majorna + $\beta_6 * Angered + \beta_7 * Biskopsgården + \beta_8 * Frölunda + \beta_9 * Högsbo + u_i, i$

The next step was to run a multiple regression with logarithmic selling price as the dependent variable for all owner occupied cooperative apartment in the sample. The coefficients given in the regression was used to predict an expected selling price for all apartments in the sample.

Regression 1+2

Regression 1 and 2 were then used to calculate a total monthly cost for owner occupied cooperative apartment.

$$\left(\frac{Predicted\ Sell\ Price * 0.02}{12}\right) + Monthly\ fee$$

When estimating the monthly cost for the owner occupied cooperative apartments the interest rate of two percent was used. This was based on information from the four largest banks in Sweden which are SEB, Swedbank, Handelsbanken and Nordea.

Regression 3

$Log\ Primary\ Rent = \beta_0 + \beta_1 * rooms + \beta_2 * square\ meter + \beta_3 * squared\ square\ meter + \beta_4 * Majorna + \beta_5 * Angered + \beta_6 * Biskopsgården + \beta_7 * Frölunda + \beta_8 * Högsbo + u_i, i$

Step three was to run a regression with logarithmic primary rent as the dependent variable for all primary-contracts in the collected data. The coefficients given in the regression was then used to predict an expected primary rent for all apartments in the sample.

Regression 4

$Log\ Secondary\ Rent = \beta_0 + \beta_1 * rooms + \beta_2 * square\ meter + \beta_3 * squared\ square\ meter + \beta_4 * Majorna + \beta_5 * Angered + \beta_6 * Biskopsgården + \beta_7 * Frölunda + \beta_8 * Högsbo + u_i, i$

Step four was to run a multiple regression with logarithmic secondary rent as the dependent variable for all secondary contracts in the collected data. The coefficients given in the regression was then used to predict an expected secondary rent for all apartments in the sample.

3.4.2 Step 2

In order to interpret how different areas affect the difference in price between the various contracts, a comparison between predicted selling price, predicted primary rent and predicted secondaryrent was made. This was done by calculating the difference between the different contracts. Thisgaveus new variables, called:

New DependentVariables

Variables	Typ of Variables	Used in	Explanation
Diff Primary and Secondary	Dependent Variable	Regression 5	The difference in price between predicted secondary rent and predicted primary rent
Diff Primary and Monthly cost	Dependent Variable	Regression 6	The difference in price between predicted primary rent and predicted monthly cost for owner occupied cooperative apartments
Secondary and Monthly cost	Dependent Variable	Regression 7	The difference in price between predicted secondary rent and predicted monthly cost for owner occupied cooperative apartments

Table 4 *The table shows three new dependent variables*

These variables were then used as independent variables in regressions:

Regression 5

DiffPrimary and Secondary$=\beta_0+\beta_1$*rooms*$+\beta_2$*square meter*$+\beta_3$*squared square meter*$+\beta_4$*Majorna* $+ \beta_5 * Angered + \beta_6 * Biskopsg$å*rden* $+ \beta_7 * Frölunda + \beta_8 * Högsbo + u_i, i$

Regression 6

DiffPrimary and MonthlyCost$=\beta_0+\beta_1$*rooms*$+\beta_2$*square meter*$+\beta_3$*squared square meter*$+\beta_4$*Majorna* $+ \beta_5 * Angered + \beta_6 * Biskopsg$å*rden* $+ \beta_7 * Frölunda + \beta_8 * Högsbo + u_i, i$

Regression 7

DiffSecondary and MonthlyCost$=\beta_0+\beta_1$*rooms*$+\beta_2$*square meter*$+\beta_3$*squared square meter*$+\beta_4$*Majorna* $+ \beta_5 * Angered + \beta_6 * Biskopsg$å*rden* $+ \beta_7 * Frölunda + \beta_8 * Högsbo + u_i, i$

3.4.3 Step 3

At last we deduced a t-tests between the means within each group. First step was to run a t-test among the predicted monthly cost and primary, then run a t-test for the predicted monthly cost and secondary and last run a t-test for secondary and primary. This was done to interpret if the means in the different groups was statistically different from each other.

4. Empirical results

This chapter explains the results from the regressions. Every output is illustrated in a table and explained. The chapter ends with a t-test.

4.1 Interpretation of the apartment market

Regressions

	Monthly cost owner occupied cooperative apartments 2016	*Rents for primary contracts*	*Rents for secondary contracts*
Rooms	0.1081***	-0.0479*	0.0648
	(0.0209)	(0.0271)	(0.0537)
Square meters	0.0384***	0.0284***	0.0134***
	(0.0056)	(0.0032)	(0.0024)
Squered Square meters	-0.0001***	-0.0000***	-0.0000***
	(0.0000)	(0.0000)	(0.0000)
MonthlyFee	-0.0003***	---	---
	(0.0000)	---	----
Majorna	-0.0700***	-0.0928**	-0.1625**
	(0.0347)	(0.0373)	(0.0701)
Angered	-0.9890***	-0.1787***	-0.2011**
	(0.1254)	(0.0293)	(0.0717)
Biskopsgården	-1.0851***	-0.1777***	-0.0770
	(0.0219)	(0.0293)	(0.0704)
Frölunda	0.1742***	-0.0008	-0.2092*
	(0.0256)	(0.0431)	(0.1187)
Högsbo	-0.3518***	0.0139	-0.0982
		(0.0661)	(0.1123)

Constant	14.0835***	7.4839***	8.2085***
	(0.0720)	(0.0991)	(0.0568)
R-squared	0.8953	0.6747	0.5611

Table 5 *Displays regressions for the contracts 2016*

4.1.1 Price for owner occupied cooperative apartments 2016

The R2 value of the regression is 0,8953, indicating that the variables describes 89.53 percent of the variation in selling price. The output shows a predicted sold price based on the market price from 2016 for all of the apartments in the dataset. The coefficients square meters shows that squared meters have a positive return on the sold price, this effect is positive and statistically significant. The coefficient Squared square meters is negative and statistically significant, this indicates that the effect of square meters follows the law of diminishing return and that an increase in square meters will have a bigger impact on the selling price on small apartments.

The coefficient monthly fee indicates that the selling price is negatively affected by 0,005 percent for every extra SEK in the monthly rent. This effect is statistically significant but very small, so the coefficient indicates that monthly rent do not have a big impact on the selling price.

The output shows that all areas have a statistically significant impact on the selling price. The coefficient Centrum has been left out and used as the reference area. The output shows that all areas have lower selling price compared to the Centrum and this effect is statistically significant.

4.1.2 Rents for secondary contracts

The R2 value of the regression is 0,5611, indicating that the variables describe 56.11 percent of variation in the selling price. The coefficients square meters show that square meters have a positive return on the sold price, this effect is positive and statistically significant. The coefficient Squared square meters is negative and statistically significant, this indicates that the effect of square meters follows the law of diminishing return and that an increase in square meters will have a bigger impact on the selling price on small apartments.

The coefficients indicate that Angered and Majorna are statistically highly significant and affect the selling price negative by 16.25 and 20.10 percent compared to the reference area Centrum. The coefficient Frölunda are statistically significant at a ten percent

significancelevel.

4.1.3 Rents for primary contracts

The R2 value of the regression is 0,6747, indicating that the variables describes 67,47 percent of variation in the selling price. The coefficients square meters shows that square meters have a positive return on the sold price, this effect is positive and statistically significant. The coefficient Squared square meters is negative and statistically significant, this indicates that the effect of square meters follows the law of diminishing return and that an increase in square meters will have a bigger impact on the selling price on small apartments.

The coefficients indicate that Majorna, Angered and Biskopsgårdenare statistically significant and affect the selling price negative by 9.28, 17.87 and 17.77 percent compared to the reference, Centrum.

4.2 Differences between contract types

Differencesbetweencontracttypes $R\text{-}squared = 0.9356$			
	Diffprimary and secondary	**Diff Monthly Cost and Secondary**	**Diff Monthly Cost and primary**
Rooms	805***	41.4896	846***
	(51.49)	(100.96)	(131.43)
Square meters	-66***	31.0554*	-36*
	(5.25)	(16.36)	(20.76)
Squered Square meters	0.44***	-0.1645	0.28
	(0.04)	(0.14)	(0.17)
Majorna	-632***	534***	-99
	(24.21)	(75.67)	(86.16)
Angered	-591***	-2150***	-2741***
	(26.94)	(84.09)	(98.9)
Biskopsgården	445***	-3494***	-3049***
	(29.81)	(109.86)	(125.09)
Frölunda	-1432***	-454***	-1886***
	(33.26)	(67.90)	(88.03)

Högsbo	-756***	-1046***	-1802***
	(23.89)	(55.87)	(74.02)
Constant	2850***	-762*	2088***
	(123)	(413)	(524)
R-squared	0.9356	0,6837	0,6671

Table 6 *Differences between contract types*

4.2.1 Difference between primary and secondary

The R2 value of the regression is 0,9356, indicating that the variables describe 93.56 percent of variation in differences between the contracts. The output shows that rooms, square meters and squared square meters are statistically significant. All of the coefficients in the output are statistically significant, indicating that the difference between predicted secondary rent and primary rent are affected differently depending on the area.

The constant indicates that the secondary rent in average is 2850 SEK higher than the primary rent. The coefficient Majorna indicates that the difference in secondary rent and primary rent in average is 632 SEK less than in Centrum. The difference in Angered is on average 590 SEK less than in Centrum, the difference in Biskopsgården is on average 445 SEK higher than in Centrum and the coefficient Högsbo indicate that the difference in average is 756 SEK less than in Centrum. The coefficient Frölunda, indicates that the difference is 1432 SEK less than Centrum, thus a average difference of 1418 SEK between secondary rent and primary rent in Frölunda.

4.2.2 Difference between secondary and monthly cost for owner occupied cooperative apartment

The R2 value of the regression is 0,6837, indicating that the variables describes 68.37 percent of variation in the selling price. The output shows that rooms and squared square meters are not statistically significant and square meters are weakly significant. All of the areas in the output are statistically significant, indicating that the difference between predicted secondary rent and predicted monthly rent on owner occupied cooperative apartment. rent are affected differently depending on the area.

The constant indicates that the secondary rent on average is 762 SEK higher than the monthly rent on owner occupied cooperative apartment. The coefficient Majorna indicates that the secondary rent and monthly rent on owner occupied cooperative apartment in average is 533 SEK less than in Centrum, thus the difference in rent and monthly fee is 228 SEK. The

difference in Angered is on average 2150 SEK bigger than in Centrum, the difference in Frölunda is on average 454 SEK bigger than in Area1 and the coefficient Högsbo indicate that the difference in average is 1046 SEK bigger than in Centrum. The coefficient Biskopsgården, indicates that the difference is 3494 SEK bigger than in Centrum, thus a average difference of 4256 SEK between secondary rent and monthly fee in Biskopsgården.

4.2.3 Difference between primary and monthly cost for owner occupied cooperative apartment

The R2 value of the regression is 0,6671, indicating that the variables describe 66.71 percent of variation in the selling price. The output shows that squared square meter is insignificant, square meter is significant at a 10 percent level and rooms are highly significant All of the areas, except Majorna, are statistically significant, indicating that the difference between predicted monthly rent on owner occupied cooperative apartment rent and primary rent are affected differently depending on the area. The insignificance in Majorna is assumed to be explained by lack of observations.

The constant indicates that the monthly fee on average is 2088 SEK higher than the primary rent. The coefficient Angered indicates that the difference in monthly fee and primary rent in average is 2730 SEK less in Angered than in Centrum, hence the primary rent is in average 652 SEK higher than the predicted monthly cost of owner occupied cooperative apartment. The coefficient Biskopsgården indicates that the difference in monthly fee and primary rent in average is 3049 SEK less in Biskopsgården than in Centrum, hence the primary rent is in average 961 SEK higher than the predicted monthly cost of owner occupied cooperative apartment in this area. In Frölunda the predicted monthly cost is in average 202 SEK higher than the predicted monthly cost of owner occupied cooperative apartment. In Högsbo the predicted monthly cost is in average 286 SEK higher than the predicted monthly cost of owner occupied cooperative apartment.

4.3 Diffrence in meanbetween the contracttypes

T-test					
	Mean	Std. Dev	Ha: diff<0	Ha: diff≠0	Ha: diff>0
Primary Rent	5580	1821			
Secondary Rent	7740	2412			
			0.0000	0.0000	1.0000
Primary Rent	5580	1821			
MonthlyCost	7347	38087			
			0.0000	0.0000	1.0000
Secondary Rent	7740	2412			
MonthlyCost	7347	38087			
			0.0001	0.0003	0.9999

Table 7 *Displays the output from a T-test on the contract types*

4.3.1 T-test

The output shows that the difference in means between primary rent and secondary rent is 2160, the difference in means between primary rent and the cost for owner occupied cooperative apartments is 1767 and the difference in means between secondary rent and the cost for owner occupied cooperative apartments is 393. The output indicates that there is a statistically significant difference in mean among the three samples. The output indicates that the secondary rent higher than monthly cost for owner occupied cooperative apartments and that the monthly cost for owner occupied cooperative apartments is higher than the primary rent.

5. Analysis

This chapter starts with hypothesis A and continues with hypothesis B and hypothesis C. It is followed by effects on the market and ends with the situation today.

5.1 Hypothesis A

The empirical part in this paper strengthens the hypothesis A: Area affects the rent and monthly cost for all contracts when it comes to the primary market and the *owner occupied cooperative market*. Table 5column rents for primary contracts shows that the quality rents in Gothenburg today take areas into account which is what could be expected according to Wennermark (2008). The results indicate that the rent in the less attractive areas Biskopsgården and Angered are 18 percent lower than in the inner city, which is considered the more attractive area.

Another reason for rents to differ might be due to the fact that landlords are allowed to raise the rent if the technical qualities of the property, the service quality or the relationship quality is improved (Wennermark, 2008). This indicates that more attractive areas where demand is high, it is profitable for landlords to increase the standard of the apartments in order to be able to charge a higher rent from tenants. While it is not profitable for landlords in less attractive areas to increase the standard of the apartments because the demand is low and there is the risk of not getting the required rent.

Table 5 column rents for secondary contracts shows that the coefficient area is insignificant and do not have an impact on the rent for some of the areas in the collected data. This result indicates that we have to reject the null in hypothesis A when it comes to the secondary market. This result can be interpreted as the housing crisis today makes people so desperate for homes that area will not affect the price you are willing to pay; hence people are so desperate for apartments that they do not care where its is located.

5.2 Hypothesis B

The empirical part of this study strengthens the null hypothesis B: *The regulated primary rent is lower than the price on the free market, hence the secondary rent and the monthly cost for owner occupied cooperative apartments.* The result in the empirical part, table 7, indicates that the primary market on average is 1767 SEK lower than the price for the owner occupied cooperative market and on average 2160 SEK lower than the secondary market. This result indicates that the primary rent is on average 1767-2160 SEK below the equilibrium price today.

Thies (2009) theory about the equilibrium rent describes that the regulated can create spillover effects on the unregulated sector if the regulated rent is below the equilibrium rent. The empirical part of this study indicates that the regulated market of primary contracts in Gothenburg creates spillover effects on the market. The results show that the rents on the unregulated secondary market is significantly higher than rents in the primary market. Hence, the regulation inhibits the market from equilibrium, the real price that consumers are willing to pay for an apartment is reflected in the housing market and the secondary market. The market, which always seeks equilibrium, then will circumvent the problem by "alternative mechanisms", like black trade, etc. The secondary market in our data is assumed not to be regulated, as the primary market, which may indicate that there is a propagation black market where people are taking advantage of the housing crisis. In a report from the National Board of Housing, Building and Planning (Boverket, 2014), the evidence of a propagating black market is presented, the result in this paper indicate that this is due to low primary rent.

5.3 Hypothesis C

Hypothesis C: *The secondary rent is equalto the monthlycost for owner occupiedcooperative apartments.* The empirical part in this study indicates that null hypothesis C must be rejected. There is a statisticallysignificantdifference in the secondary market and the owner occupiedcooperative market. The secondary rent is statisticallysignificantlyhigherthan the monthlycostofowner occupiedcooperative apartments.

The problem withthisresult is that people will always be in need of housing, which means that if there are no apartments available on the primary market, consumers will turn to either the housing market or the secondary market. It can be assumed that consumers that have the ability to buy an apartment will turn to the housing market, while consumers who cannot get loans or cannot pay a down payment of at least 15 percent of the purchase price will turn to

the secondary market. This creates problems because housing plays a big role in people's lives, meaning that these consumers are forced to accept a high rent on the secondary market in order to have somewhere to stay. Consumers on the secondary market will then have less money to spend on consumption and saving, which will affect the economy in general.

5.4 Negative side effects

The paper indicates that the price of a secondary contract is statistically significant higher compared to a primary contract. This price difference between the contracts creates opportunity for an increased black market, hence people see an opportunity to keep primary contracts and make money by renting them out on the secondary market. A side effect that causes fewer primary contracts on the market and a growing black market. A effect that is predicted to occur in Thies (2009) theory; that the market is always searching towards equilibrium, which in this case will be through alternative methods, hence the black market.

Raised in the earlier parts of the paper, there is a trend to convert rental apartments into owner occupied cooperative apartments. This conversion can be assumed to be due to the fact that landlords do not see any profit in the rental market as this market is regulated.

When the rental apartments are converted to owner occupied cooperative apartments there will be fewer primary contracts available on the market. Consumers are then forced to alternative markets, in this case the housing market or the secondary market. A disadvantage that segregates the market, as consumers with less ability to pay are forced to accept unfavorable contract.

6. Conclusion

The results in this paper indicate that the regulation of the rental market in Gothenburg do not fulfill its purpose. This study also shows, among other things, that there is a significant difference in monthly cost for different contract types.

The purpose of a regulated rental market: everyone should have the right to a safe living situation, regardless income. Decision-makers starting point is good in theory but in practice the regulation have many side effects (Eklund, 2013, 47-49)

The results from this study shows a significant difference in monthly cost for apartments depending on area and contract type in Gothenburg. The regulation creates negative side effects on the society. With the current housing shortage in addition, segregation and black trade results in fewer apartments on the primary market. Based on this study the purpose of the regulation fails.

By liberalize the market and allow the rents to be controlled by the free market, the incentives to rent out apartments on the black market might decrease. People will see no profit in retaining their primary contracts when there is no difference in price. A liberalizing of the market would allow landlords to charge a higher rent, hence the incentive to convert rental apartments into owner occupied cooperative apartments decreases.

An alternative to guarantee the people a safe living situation would be to introduce economic support for people in need. This solution would guarantee people's security and still keep the market in equilibrium.

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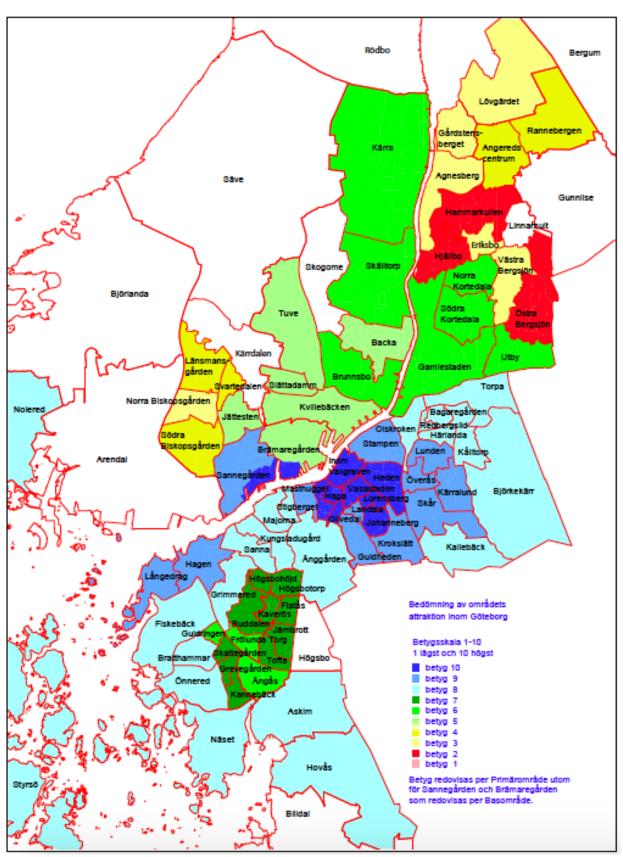
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Appendix 1

(Wennermark, 2008)

Appendix 2

Monthly rent for owner occupied cooperative apartments
R-squered = 0.7322

Variables	
Rooms	-0.0211
	(0.0214)
Square meters	0.0417***
	(0.0033)
Squered Square meters	-0.0002***
	(0.0000)
Majorna	0.1256***
	(0.0233)
Angered	0.2652***
Biskopsgården	-0.0317
	(0.0197)
Frölunda	0.1742***
	0.0256
Högsbo	0.0746***
	0.0203
Constant	6.3874***
	0.0773