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Framework procurements and their effect on the Swedish housing market

An analysis of SABO Kombohus Bas

Simone Heller & Bonnie Winnberg

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Master of Science thesis

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Authors: Bonnie Winnberg and Simone Heller
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Abstract

Sweden is suffering from a large housing shortage due to urban population growth and low levels of new construction. Public housing companies play a major role on the market with their 46 percent share of the rental market. The production of rental apartments is especially problematic since profitability is limited. The low levels of new supply could be explained by high construction costs since they have reached levels that now inhibit the building of new rental apartments. One approach to increasing the supply of rental apartments on the Swedish housing market is by introducing framework procurements for turnkey ready multi-family housing. The effect of such framework procurement is researched, analyzed and put in relation to theories in the field of real estate economics, urban spatial theory, industrialized housing construction and competition. The objective of this thesis is to contribute to the field of research and increase the knowledge of supply side factors on the housing market. To fulfill the purpose of this thesis, analysis has been conducted with a mixed method approach, using a survey and interviews to reach all the public housing companies that have used the framework procurement Kombohus Bas. The case was chosen because it is a framework procurement for turnkey ready multi-family housing. Kombohus Bas has been developed by the Swedish Association of Public Housing Companies in order to try to help the public housing companies increase the supply of rental apartments. Research results show that the framework procurement Kombohus Bas has increased the number of rental apartments on the Swedish housing market, most importantly because it has lowered the production costs, as well as simplified and shortened the process of building housing. Thus, the use of framework procurements for turnkey ready multi-family housing could reduce the housing shortage.

Acknowledgement

This master's thesis has been performed during the spring of 2016 at the Department of Real Estate and Construction Management at the Royal Institute of Technology (KTH) in Stockholm. The thesis constitutes the final part of our Master of Science degree in the master's programme Real Estate & Construction. The idea behind the research was initiated by SABO and further developed into research questions by the authors. Costs associated with the research have been financed by SABO.

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Stockholm, June 2016
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Examensarbete

Titel: Ramavtalsupphandlingar och dess effekt på den svenska bostadsmarknaden – En analys av SABO Kombohus Bas
Författare: Bonnie Winnberg och Simone Heller
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Sammanfattning

Det råder en stor bostadsbrist i Sverige idag vilken framförallt beror på en ökande befolkning och låga nivåer av nyproduktion. De allmännyttiga bostadsbolagen är stora aktörer inom bostadssegmentet med en andel om 46 procent av hyresmarknaden. Produktionen av hyresrätter är speciellt problematisk eftersom lönsamheten är begränsad. De låga nivåerna av nytt utbud kan till viss del förklaras av höga produktionskostnader eftersom dessa har nått nivåer som nu hämmar nyproduktionen av hyresrätter. Den här forskningsrapporten analyserar möjligheten att öka utbudet av hyresrätter på den svenska bostadsmarknaden genom att introducera ramavtalsupphandlingar för nyckelfärdiga flerfamiljshus. Effekten av sådana ramavtalsupphandlingar analyseras i denna studie och sätts i relation till teori inom fastighetsmarknaden, stadsbyggnadsekonomi, industrialiserat byggande och konkurrens. För att uppfylla målet med studien har ett case kallat Kombohus Bas studerats. Kombohus Bas valdes ut på grund av att det är en prispressad ramavtalsupphandling för nyckelfärdiga flerfamiljshus. Ramavtalsupphandlingen har tagits fram av Svenska Allmännyttans Bransch Organisation, SABO, med syfte att försöka underlätta för de allmännyttiga bostadsbolagen till att öka utbudet av hyresrätter på marknaden. Syftet med studien är att bidra till befintlig forskning och öka kunskaperna kring de faktorer som påverkar utbudssidan av bostadsmarknaden. Forskningen har utförts genom att använda en blandad metodik där både en enkät och intervjuer har genomförts med syfte att nå alla allmännyttiga bostadsbolag som använt ramavtalsupphandlingen Kombohus Bas. Resultatet från studien visar att ramavtalsupphandlingen Kombohus Bas har ökat utbudet av hyresrätter på den svenska bostadsmarknaden, främst genom att sänka byggkostnaderna samt genom att förenkla och förkorta byggprocessen. Detta resultat indikerar att bostadsbristen kan minskas genom att använda ramavtalsupphandlingar för nyckelfärdiga flerfamiljshus.

Förord

Den här masteruppsatsen har genomförts under våren 2016 vid avdelningen för Fastigheter och Byggande vid KTH, Kungliga Tekniska Högskolan i Stockholm. Masteruppsatsen är den sista delen av vår Civilingenjörsutbildning. Idén bakom forskningen initierades av SABO och vidareutvecklades av författarna. Kostnaderna för forskningen har finansierats av SABO.

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Bonnie Winnberg och Simone Heller

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Glossary

English - Swedish

Public housing companies = Allmännyttigt bostadsbolag

Framework procurements = Ramavtalsupphandling

Construction costs = Byggnadskostnad

Production costs = Produktionskostnad

Dwelling = Bostad

Tender = Anbud

Impairment = Nedskrivning

Municipal special requirements = Kommunala särkrav

Required rate of return = Avkastningskrav

The National Board of Housing = Boverket

Institute of Economic Research = Konjukturinstitutet

Swedish Competition Authority = Konkurrensverket

The Swedish Union of Tenants = Hyresgästföreningen

1. Introduction

Shortage of housing in Sweden is a constant talking point within the media, businesses and politics. The low level of housing construction is causing problems not only for individuals but also for companies. It generates a downward spiral of companies not being able to employ or have headquarters within certain areas of the country and this can have a negative impact on the Swedish economy (SOU 2015:105). The low supply of dwellings is a problem within the rental market with long housing queues all over the country. The government is prioritizing this matter and is searching for solutions that will help to increase the supply of housing. The National Board of Housing has estimated that, to meet the increasing demand, Sweden will have to build 700 000 new dwellings by the year 2025.

1.1 Background

The real estate market is affected by demand side factors, supply side factors and institutional factors (ESRB 2015). The demand side depends on household income, credit availability, interest rates, home ownership rates and demographic factors. The supply side depends on residential investment, housing construction and construction costs. Besides demand and supply, the prices and quantity of housing will be affected by institutional factors, such as housing taxes, government subsidies and mortgage contract features.

In a well-functioning efficient market the supply is expected to increase when the price of the good is increasing due to an increase in demand (Mayer & Somerville 2000). However, in Sweden the supply does not meet the demand (Riksbanken 2015). The reason for the low supply in Sweden is generally seen as a combination of different factors. One of the contributing factors is the low level of housing construction which Sweden struggles with today (Boverket 2015b). Other factors usually discussed are rising land and construction costs, long planning processes, the municipal planning monopoly and a lack of competition. Looking at the cost of construction, the Swedish market has 65 % higher construction costs than the average cost in the EU (Eurostat 2014). These costs have also increased at a higher rate than the GDP since the beginning of the 1990s.

As a result of this combination of factors, the housing supply in Sweden is low. Only 33 000 dwellings were produced in 2015 of which 13 000 were rental apartments (SCB 2016). The amount of construction has increased during the last couple of years but there will still not be enough housing to meet the increasing demand (Riksbanken 2015).

At the beginning of 2015, 82 % of the Swedish population lived in a municipality with a shortfall of housing (Boverket 2015a). Based on today's situation and demographic prognoses, the demand for housing in the near future will be higher than the supply. In 80 % of the municipalities that state that there is a need for new housing, the reason given for not building more apartments is high construction costs (Boverket 2013). All the evidence points towards the need to adopt a way of constructing housing that can enable companies to build apartments with lower construction costs.

1.2 Purpose

This thesis focuses on the possibility of increasing the housing supply in the Swedish rental market by using framework procurements for turnkey ready multi-family housing. Differences in terms of production costs will be analyzed in order to give the research a broader perspective, and to provide a deeper understanding of the mechanisms affecting the housing supply in Sweden. To fulfil the purpose of this thesis the main research question that will be answered is:

Can framework procurements for turnkey ready multi-family housing increase the supply on the Swedish housing market?

In order to answer the research question, a case called Kombohus Bas will be analyzed. This case was chosen because it is a framework procurement for turnkey ready multi-family housing, and it has been used all over Sweden.

The following three sub-questions will also be addressed:

- ***Has Kombohus Bas increased the housing supply on the market?***
- ***What enables lower production costs?***
- ***What are the obstacles for future housing construction in Sweden?***

1.3 The case: Kombohus Bas

The public housing companies, with their 46 percent share of the rental segment, play an important part in building more rental apartments (Boverket 2013). In order to help the public housing companies to increase their construction pace, the Swedish Association of Public Housing Companies, SABO, has presented a framework procurement for turnkey ready multi-family housing units called “Kombohus Bas” (SABO 2014). The aim is to offer the public housing companies a cheaper way to build and to put pressure on the general construction price levels in Sweden.

Over the last few years, many public housing companies all over Sweden have built housing using the framework procurement of Kombohus Bas. The agreement gives a set construction cost which is meant to be 25 % lower than market prices (SABO 2014). Since there are now many comparable objects of Kombohus Bas in Sweden, it is possible to analyze how this concept has affected the rental housing supply and whether or not these types of framework procurements associated with building rental apartments are a successful concept.

1.4 Limitations

In this thesis, focus has been on the supply side factors affecting the housing market in Sweden. The theory and results presented are thus limited in that they do not include demand side factors. Furthermore, only one kind of framework procurement has been used as a case. Along with Kombohus Bas, SABO has developed two other similar framework procurements; Kombohus Mini and Kombohus Plus. Future research could be conducted where other cases are analyzed to compare the findings with the results from the present research.

1.5 Structure of the thesis

The remaining chapters are organized as follows. The second chapter explains the theoretical models behind the supply and demand on the housing market while the third chapter includes theory of construction cost, productivity and competition. The role and history of the public housing companies is also presented in the third chapter. The fourth chapter includes a literature review of previous studies on Kombohus Bas. The fifth chapter presents the methodology being used in the research which is then followed by the results in chapter six. The analysis is presented in chapter seven and finally the conclusions can be found in chapter eight.

2. Theoretical framework of real estate markets

In this chapter a theoretical model for demand and supply on the housing market is presented and explained. The theoretical model will give the reader an understanding of the factors that affect the housing market and the way they are linked together.

2.1 The Four Quadrant Model

The Four Quadrant Model (Fig. 1) by DisPaquale and Wheaton (1992) is a framework that is constructed to illustrate how two markets within the real estate market, the real estate space market and the real estate asset market are linked together. It is applicable to both commercial markets and the residential real estate market, and it illustrates how exogenous shocks will impact quantity, rent, price and construction levels. The factors that affect the markets are connected to the macro economy and the financial markets.

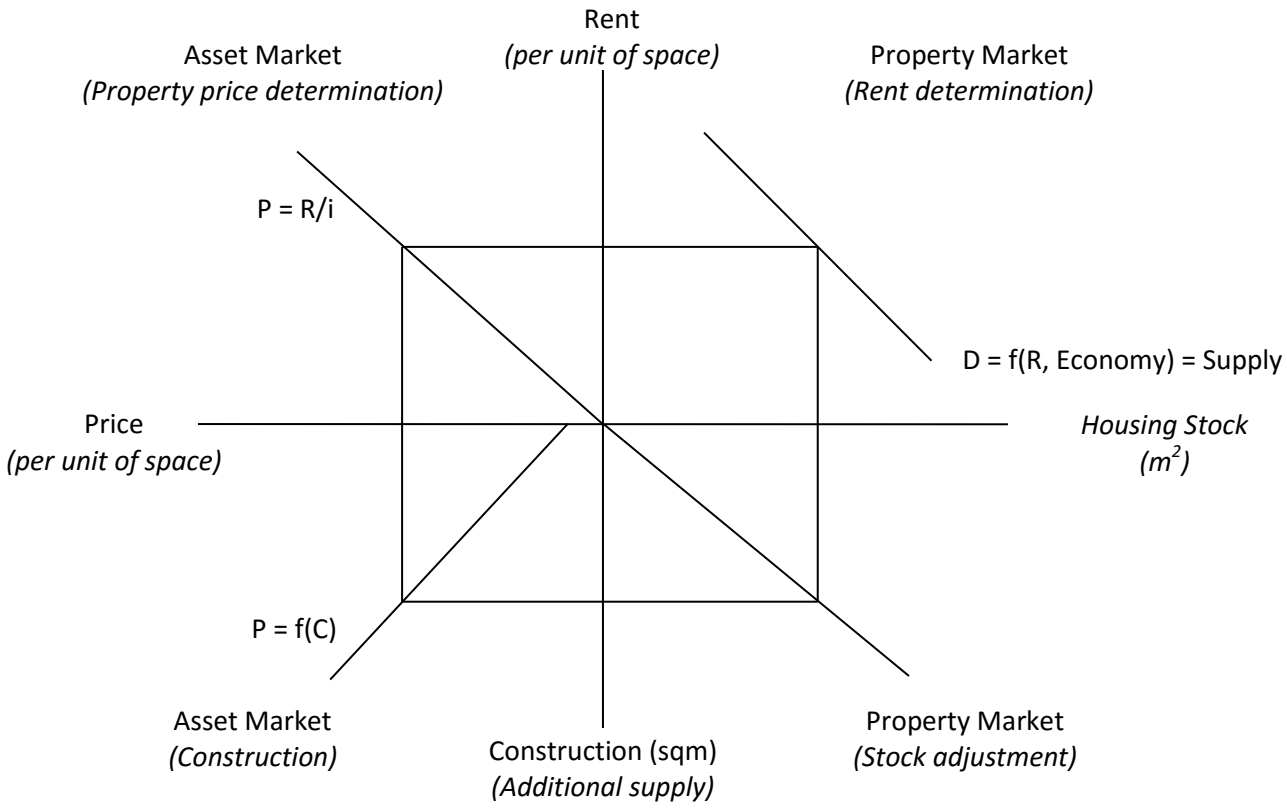


Figure 1. Four Quadrant Model. Source: DiPasquale & Wheaton (1992)

The first link between the two markets is rent, and how rent affects demand (DiPasqual & Wheaton 1992). In this model, market rents are applied. In the northeast quadrant there is a relation between quantity and rent. The curve slopes down because the higher the rent will be in the space market, the less quantity will be demanded. On the other hand, if rents increase so will the demand for real estate assets in the asset market. Investors that seek higher profit will be more interested in investing in real estate assets since the future income stream will be higher.

In the northwest quadrant there is a relation between rent level and price, i.e. the price someone is willing to pay for that given rent level (DiPasqual & Wheaton 1992). The slope of the line illustrates the ratio between the price the market is willing to pay and a given level of rent. Or it can also be seen as the inverse of the cap rate. If the cap rate decreases then the slope would flatten out and prices in the market would be higher for the same level of rent, and vice versa. The cap rate is affected by four factors: the long term interest rate, expected rent growth, risk in future income stream and changes in real estate tax.

The southwest quadrant illustrates how price affects construction (DiPasqual & Wheaton 1992). The curve intersects with the price axis at the level where the value of the property, i.e. price, equals construction cost. That means that there will be more new construction on the market as long as the price of the property exceeds the construction cost. If not, no new construction will take place. The southeast quadrant shows how a higher construction level leads to a larger stock of real estate as new supply is added on the market, minus losses from the stock. If the stock has increased, then asset prices will decrease. This is the second link between the two markets.

When all markets are connecting, the model is in equilibrium and forms a square (DiPasqual & Wheaton 1992). The model illustrates a long-run equilibrium and what happens when factors change over time. Macroeconomic drivers such as increased population or growth in income and production are factors that affect the space market. Drivers that affect the ownership of an asset, such as long-term interest rates, risk or change in tax treatment, will affect the asset market. How large these changes in the variables will be depends upon the elasticity of the curves in the model.

Changes in the space market

Increased demand due to factors such as increased population affects the demand on the space market, forcing rents to increase in the short run since quantity is fixed and cannot increase immediately (Fig. 2) (DiPasqual & Wheaton 1992). Higher rents will increase the value of the property. Increased asset value leads to a higher profitability, and new construction will start since it is profitable to build. New supply comes on to the market and the stock increases, satisfying the increased demand, and connecting all markets together. The markets are always moving towards equilibrium, although under- and overshooting is possible.

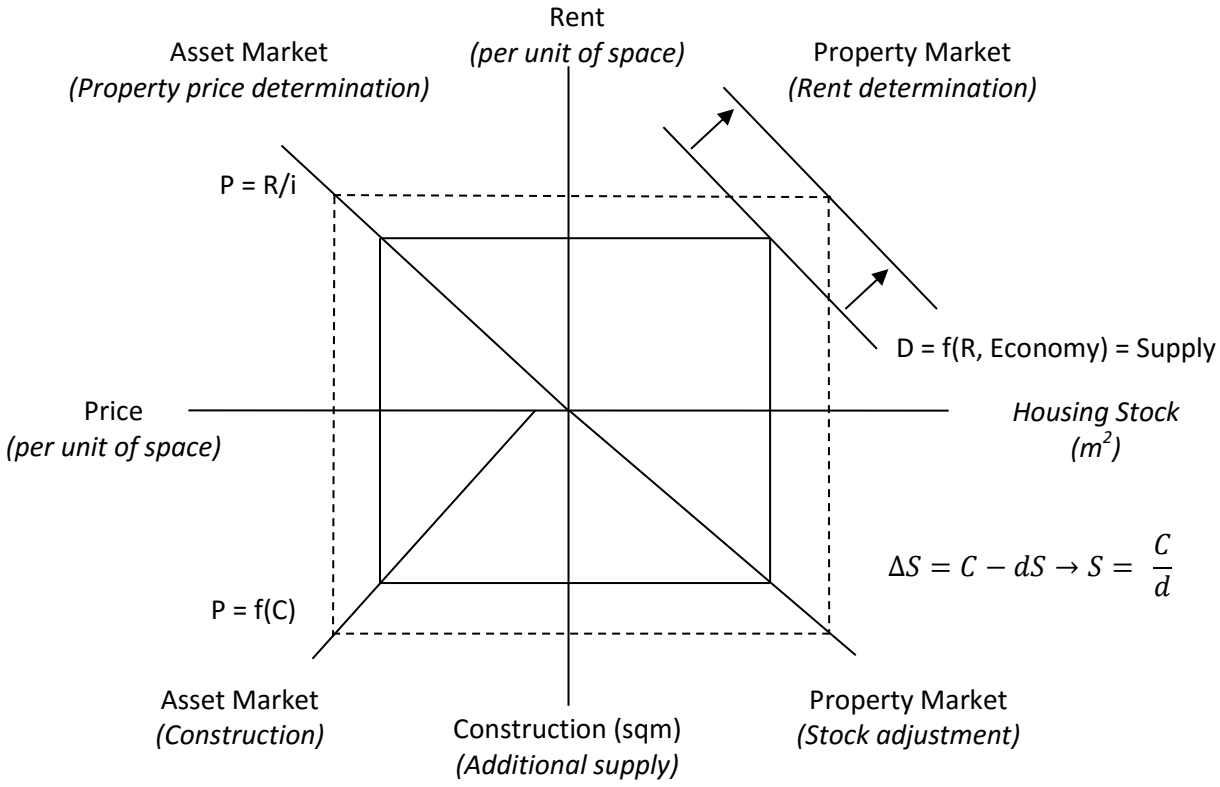


Figure 2. Four Quadrant Model with increased demand for space. Source: DiPasquale & Wheaton (1992)

Changes in construction costs

To fully understand the real estate market and its mechanisms, the four quadrant model gives us a valuable tool to describe this large sector and how it is connected in a simple way (DiPasquale & Wheaton 1992). Decreased construction costs should have an effect on the total production cost of a new property, causing the curve in the southwest quadrant to shift to the right (Fig. 3). All else equal, the level of new supply on the market would increase.

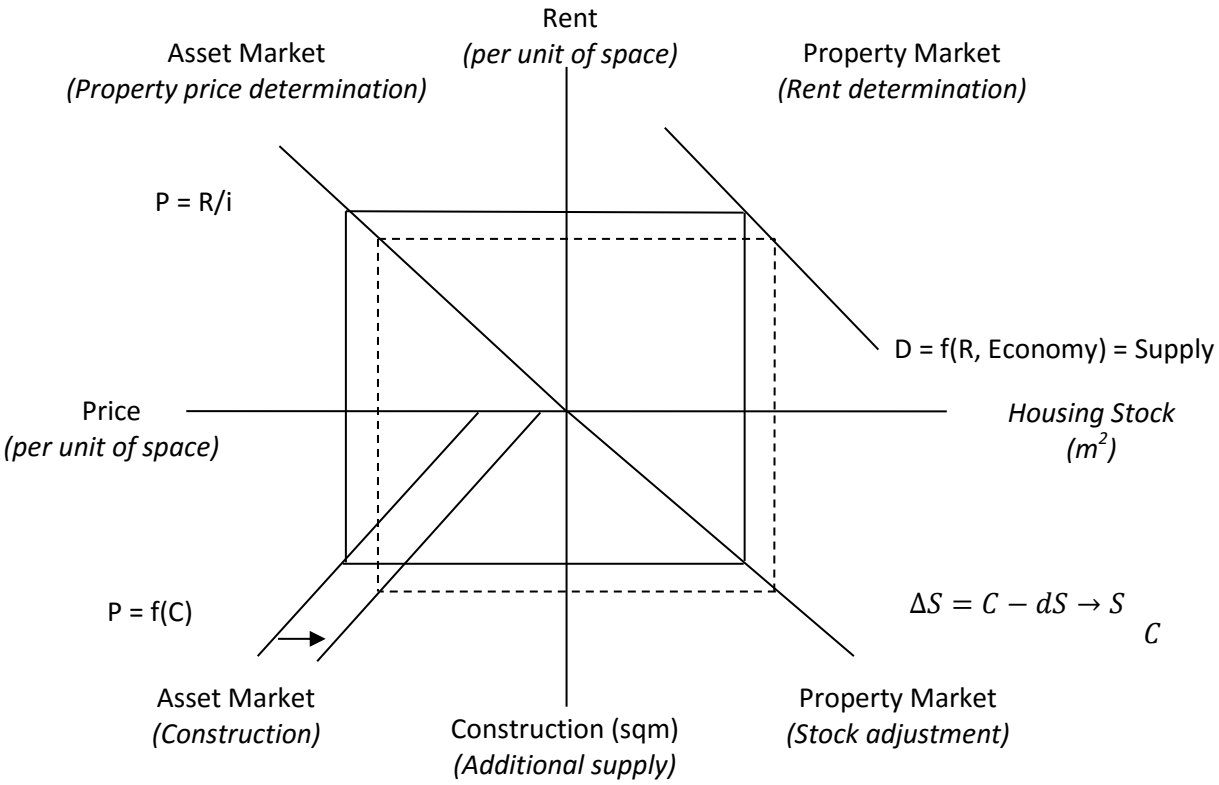


Figure 3. Four Quadrant Model illustrating the effects of decreased construction costs. Source: DiPasquale & Wheaton (1992)

2.2 Summary of theoretical framework of real estate markets

In this chapter a theoretical model for the supply and demand on the housing market has been presented. The aim of this research is to analyze whether framework procurements for turnkey ready multi-family housing can increase the supply on the Swedish market. In order to answer this question it is important to understand the mechanisms behind the housing market. The Four Quadrant Model illustrates that the supply should increase when there is an increase in the demand or if the construction costs are decreased. This is an interesting aspect that will be put in relation to the case used in this thesis and further discussed in Chapter 7.

3. Overview of housing construction factors

In this chapter the theory of construction costs, productivity and competition is presented. The history and the role of the public housing companies are also found in the end of the chapter.

3 .1 Housing supply and construction costs

Theory states that the construction cost and new supply of housing has a significant correlation (Somerville 1999). The Four Quadrant model illustrates that when the construction costs increase, the levels of new supply will decrease. However, up until the end of the 1990´s several empirical studies failed to find any correlation between new housing supply and construction costs. It wasn't until 1999 that Somerville found a consistent relationship between construction costs and new supply and the fact that the number of housing starts is cost-elastic. In a later study conducted in 2011 by Liu and London, a significant relationship between costs and supply were found on the Australian housing market. The housing situation in Australia is similar to that in Sweden, with both a low rate of increase in new construction combined with a high increase in the construction costs.

3.1.1 Construction cost factors

Houses are often an immobile heterogeneous product with a high production cost (Boverket 2014:14). The factors that generally affect the cost of producing goods can be divided into four groups: project-specific factors, macroeconomics and political factors, competition and market conditions, and client- and contractor-related factors (Warsame 2011). The price, on the other hand, includes any profits of the contractors. When talking about production costs for dwellings, all costs such as the cost for acquiring the land, building the actual house and different fees and taxes are included (Boverket 2014:14). Differences in the production costs for houses can be explained by variations in the formation and design of projects; the efficiency may vary and the prices for the individual parts may differ. The geographic location and the climate are also said to affect the cost. The construction costs are the production costs excluding the cost of the land.

Different tools are used to measure the development of cost for building houses. However, since houses are heterogeneous and the concept of cost may include different segments, it is difficult to ensure that the same things are being compared (Boverket 2014:14).

According to SCB (Swedish Statistics Bureau), the following three indices are used to measure building cost development (Boverket 2014:14).

- The construction cost index (*Faktorprisindex FPI in Swedish*) measures the price development of the resources needed in construction. It is a compounded index based on the price development of different production inputs such as material, wages, transportation costs and interest. This index does not include the cost of land.

- The building price index (*Byggnadsprisindex BPI in Swedish*) is an indicator of prices for real estate that takes quality and design into consideration. It includes the cost for construction work, fees for connecting electricity and district heating and all land costs and consequently it should reflect the price that the developer actually pays including any profits.

- Prices for newly developed residential buildings.

Criticism of both the construction cost index and building price index is based on the fact that they do not take into consideration quality changes. Because of this, the indices can display a misleading picture where the price development is overestimated and the productivity development underestimated (SOU 2015:105).

3.1.3 Construction costs in Sweden

As figure 4 shows, the cost of constructing multiple family housing in Sweden has increased more than the CPI in Sweden in the last 15 years. As a result, housing is becoming more and more expensive (Konkurrensverket 2015:4).

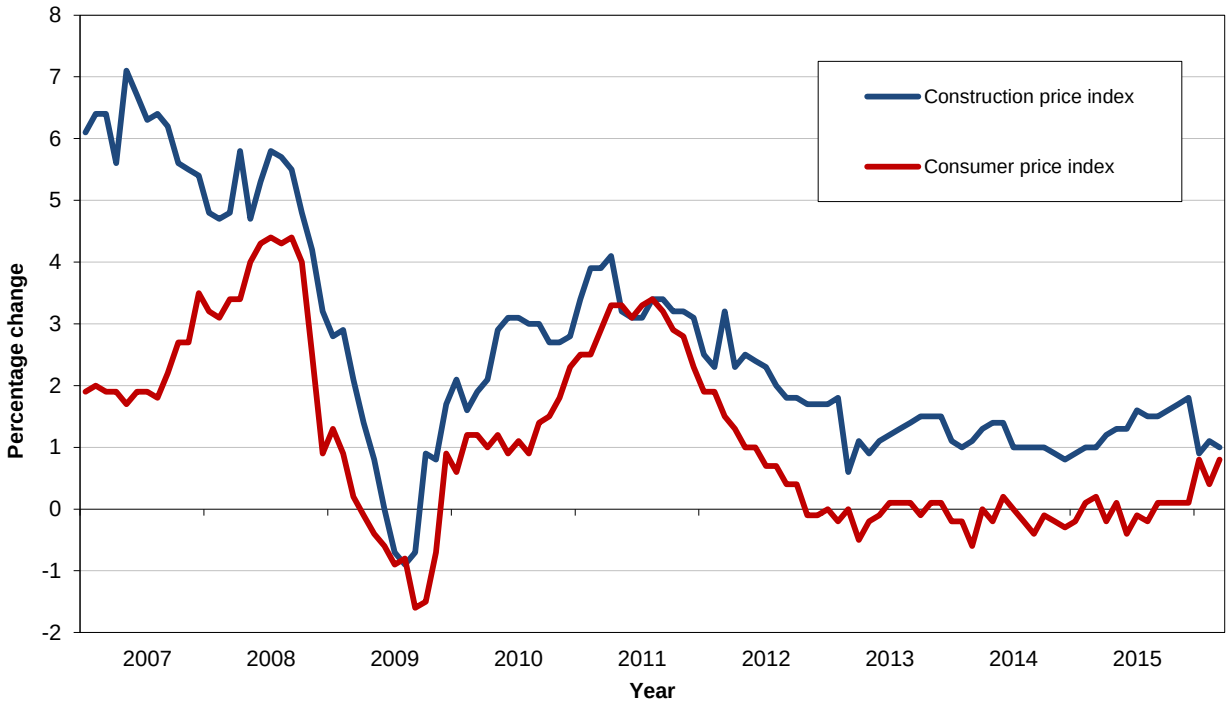


Figure 4. Percentage change compared to previous year. Construction cost index in Sweden and Consumer price index. Source: SCB (2016)

Similarly, figure 5 shows that the building price index has also increased more than the CPI over the last 20 years (SCB 2016). The increased levels can also be illustrated by looking at the levels of the building costs and total production costs for producing rental apartments in Sweden (Fig. 6). In the beginning of the 2000s, the levels were 10 000 – 15 000 SEK per useful floor space including VAT. Today, these levels have risen to between 25 000 – 30 000 SEK per useful floor space including VAT. In 2014, the total construction costs for a rental apartment were 25 493 SEK per useful floor space including VAT and the total production costs for a rental apartment reached 28 827 SEK per useful floor space including VAT.

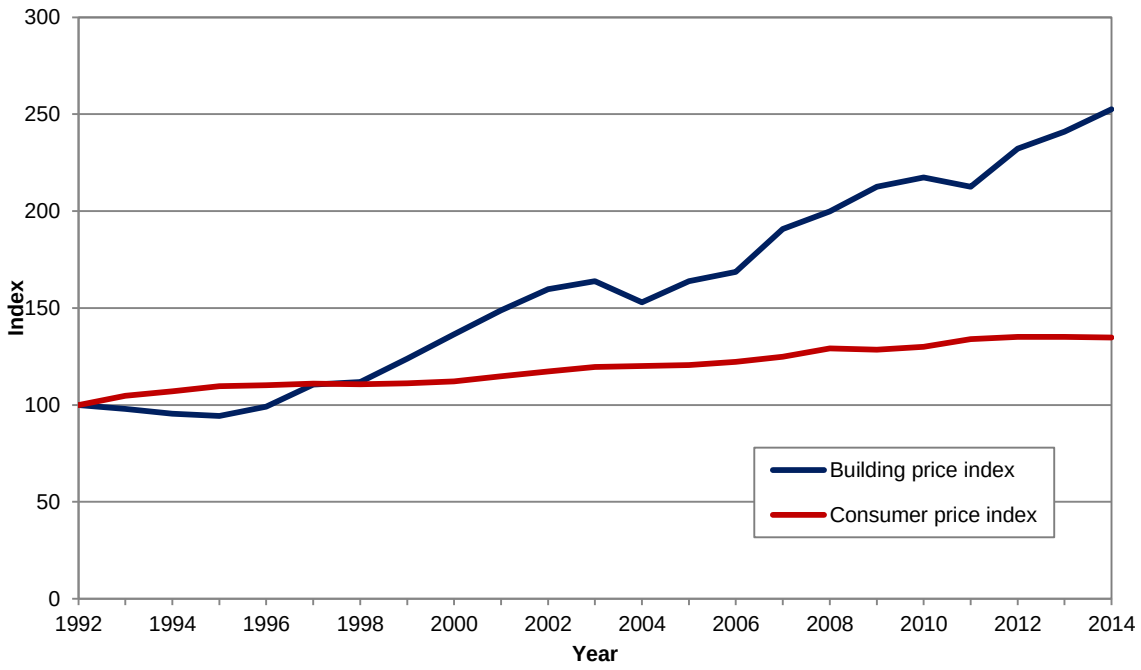


Figure 5. Building price index vs Consumer price index. Source: SCB (2016)

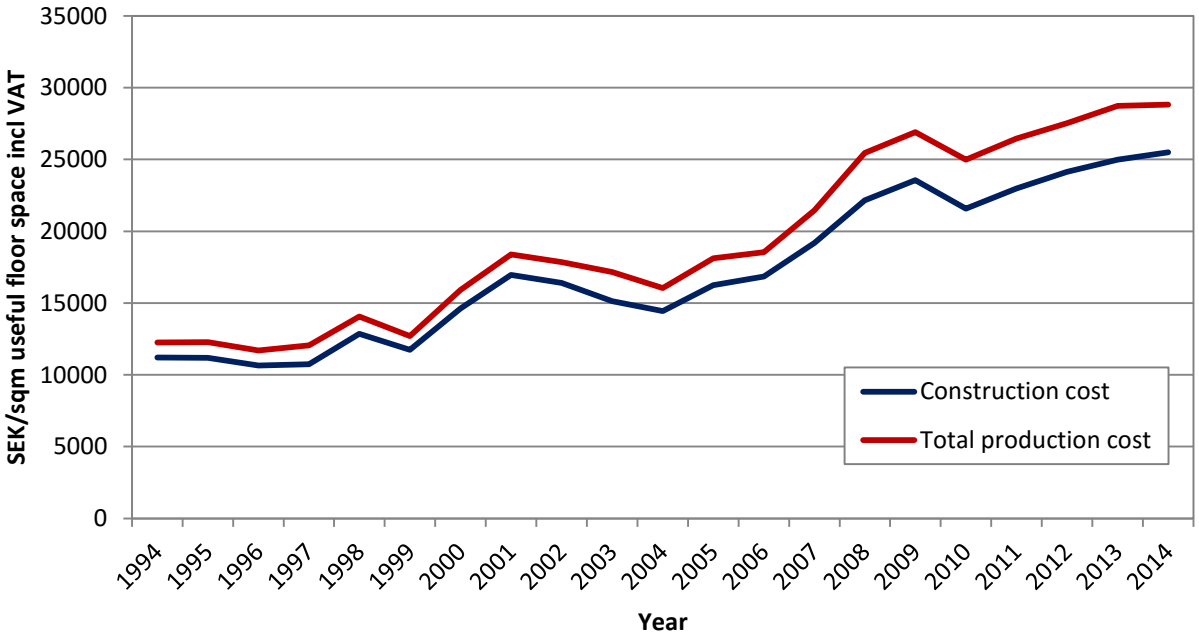


Figure 6. Costs for producing rental apartments in Sweden. Source: SCB (2016)

Within real estate, the profitability of new construction can be measured with Tobins Q which is the quotient of the price of a house and the cost of constructing a new house (Equation 1) (Mayer & Somerville 2000). The model, which is based on the neoclassical investment model presented by Tobin in 1969, suggests that if the quotient is higher than 1 it is profitable to construct new dwellings. In an efficient market, the players on the market are expected to construct new dwellings when the demand increases.

$$TQ = \frac{Price\ of\ existing\ property}{Cost\ of\ producing\ a\ new\ property}$$

Equation 1. Tobins Q. Source: Tobin 1969

Despite the high construction costs, one third of the Swedish municipalities had a Tobin's Q higher than 1 in 2014, indicating it would be profitable to construct housing there (SOU 2015:105). In the larger regions the figure is often found to be over 2. The reason the construction is still on low levels could be explained by lack of competition.

3.1.4 International comparisons

There have only been a few scientific studies that compare the building costs on an international level. Eurostat is the statistical office of the European Union and it provides statistics which enable comparisons between the countries (Eurostat 2016). The statistical office produces reports with the purchasing power parities (PPP), that is, the price levels between the countries when taking the GDP into consideration. In the Eurostat report from 2014, the Swedish construction costs were in third place within the European countries (Fig. 7). The report also concludes that the construction prices are on average 65 % higher in Sweden than in the rest of the European countries.

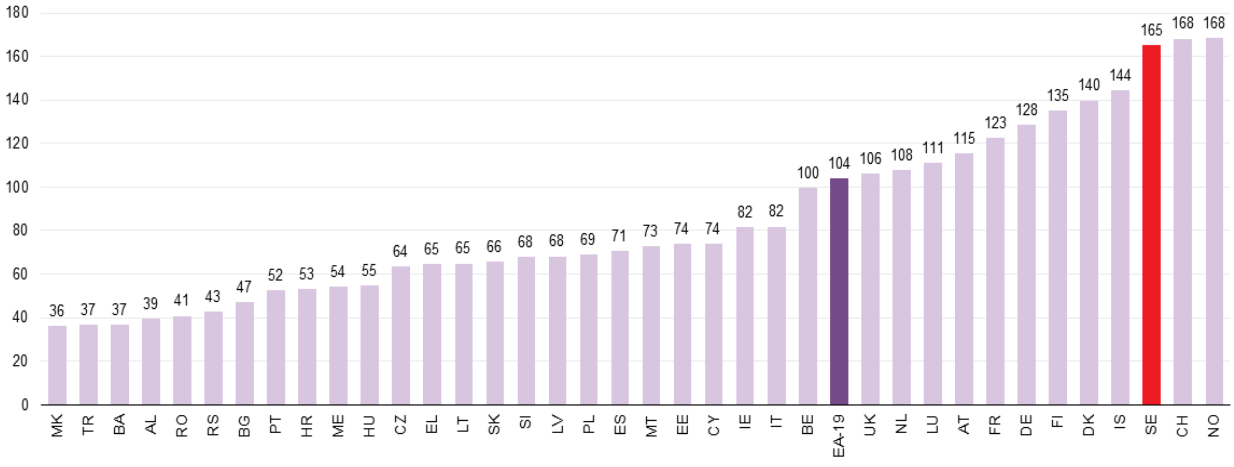


Figure 7. Price level indices for construction in Europe. Average within the European countries is 104 and Sweden 165. Source: Eurostat (2014)

When comparing the cost development over time, the Swedish construction costs have increased more than the average in Europe (Fig. 8). Comparing with the northern countries, only Norway had a higher construction cost increase than Sweden.

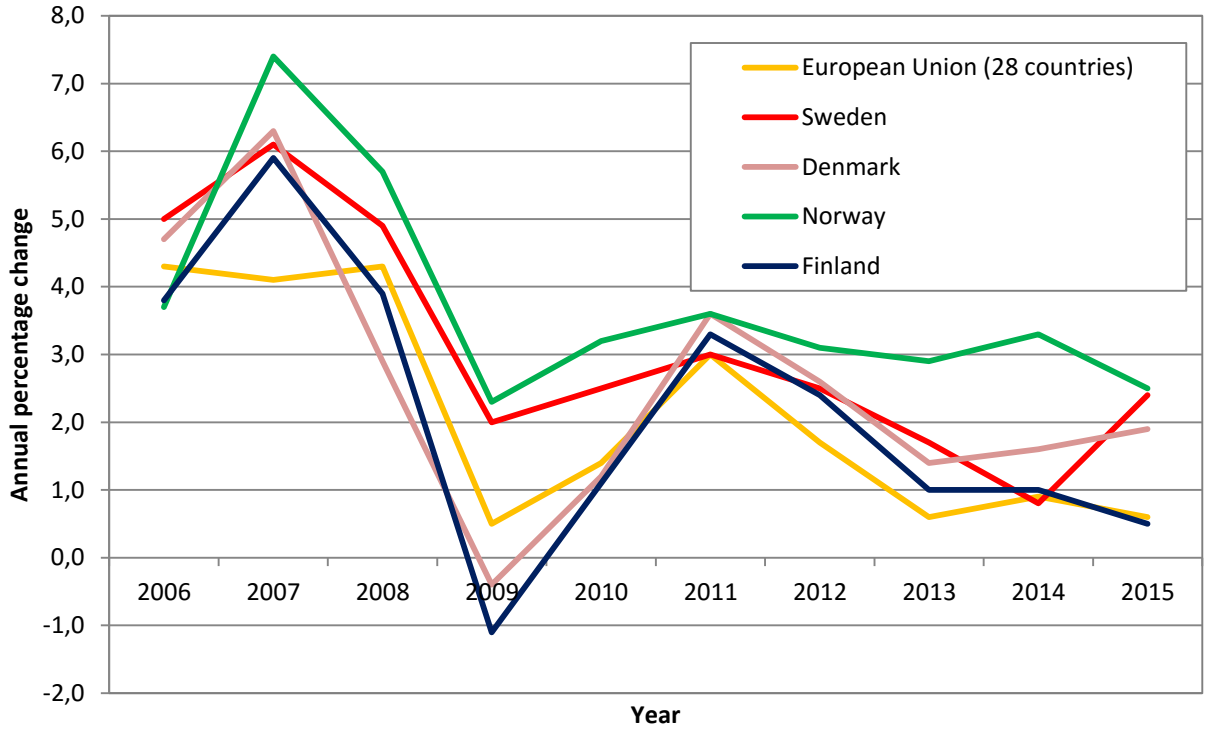


Figure 8. Construction costs in Europe, annual percentage change. Source: Eurostat (2016)

Generally, countries with a high economic standard will demand housing with a higher standard, which results in higher construction costs for producing those kinds of housing. As a result, the countries with high economic standard will also be higher up when comparing construction costs between the countries (SOU 2015:105).

The problem of high construction costs is not exclusive to Sweden (SOU 2015:105). Several European countries are experiencing high housing prices, low productivity development and increasing construction costs and as a consequence there is a housing shortage in many countries. Thus, several countries have initiated programmes trying to identify the problems and find solutions. In Finland, the construction costs are much lower than in Sweden and this has resulted in a development of housing units per citizen, which is almost three times higher than in Sweden (Kadefors et al. 2013).

3.1.5 The effect of high construction costs

Whether or not high construction costs translate into high housing costs for households is a question that is discussed frequently. High building prices do not necessarily cause problems for households if the income levels increase at the same pace. The relationship between construction costs and rental levels is also hard to establish. The SCB has studied this relationship and has only found a weakly significant relationship between the variables (Boverket 2014:14). However, it is fair to say that the situation is serious if the construction costs are so high that the level of supply being produced is inhibited. According to the report SOU 2015:105, the construction costs in Sweden have reached that level and are now inhibiting an increase in the construction of housing.

According to the forecast from the National Board of Housing, there is a need for approximately 70 000 dwellings annually until 2025 to meet the demand. In 2015, over thirty thousand dwellings were built and put on the market, of which only 13 000 were rental apartments in multi-family housing (Fig. 9).

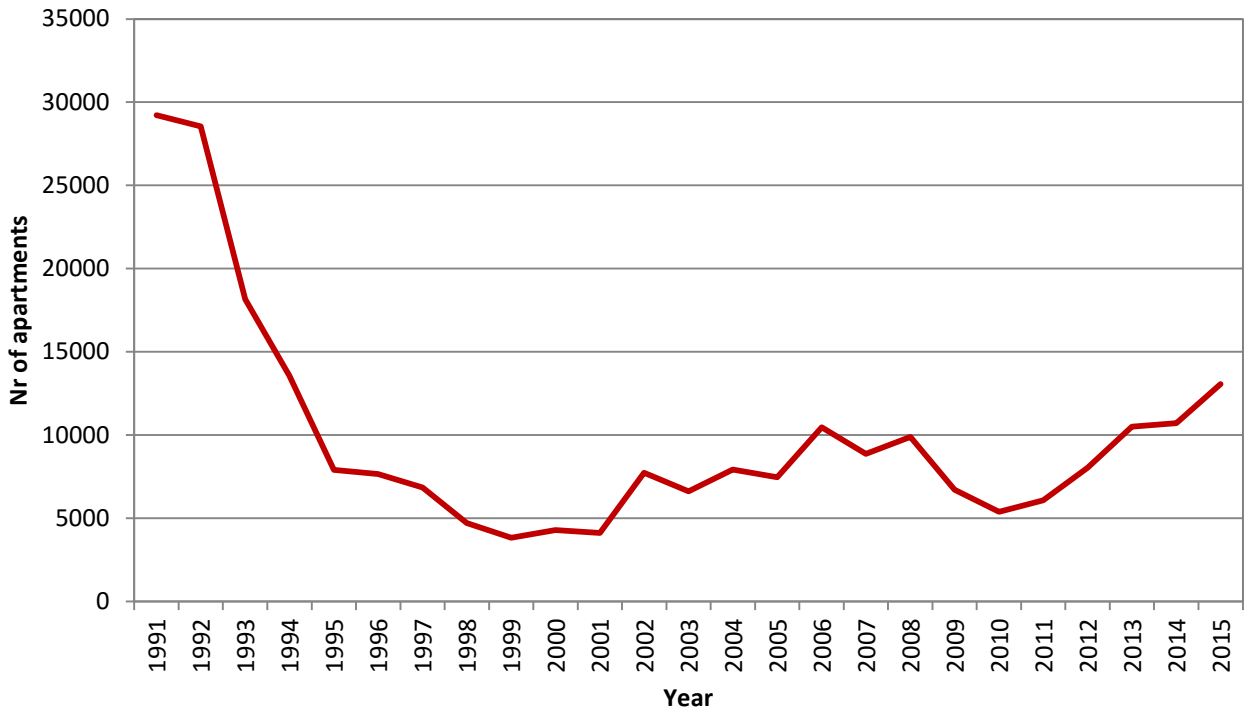


Figure 9. No. of rental apartments in multi-family housing being completed each year in Sweden. Source: SCB (2016)

3.2 Productivity within the construction sector

Productivity in the construction sector in Sweden has been criticized and is being discussed in many forums. The productivity within the construction sector in Sweden has stagnated and been on the same level since the beginning of the 1990´s (Lind & Song 2012). Productivity is a measure of how much output is received for a certain amount of input and is used to compare the performance over time. When comparing the construction industry with the manufacturing industry (Fig. 10), the productivity within the manufacturing has nearly doubled in the last twenty years while the construction industry has been on the same level, resulting in low levels of improvement and innovation (McKinsey 2016).

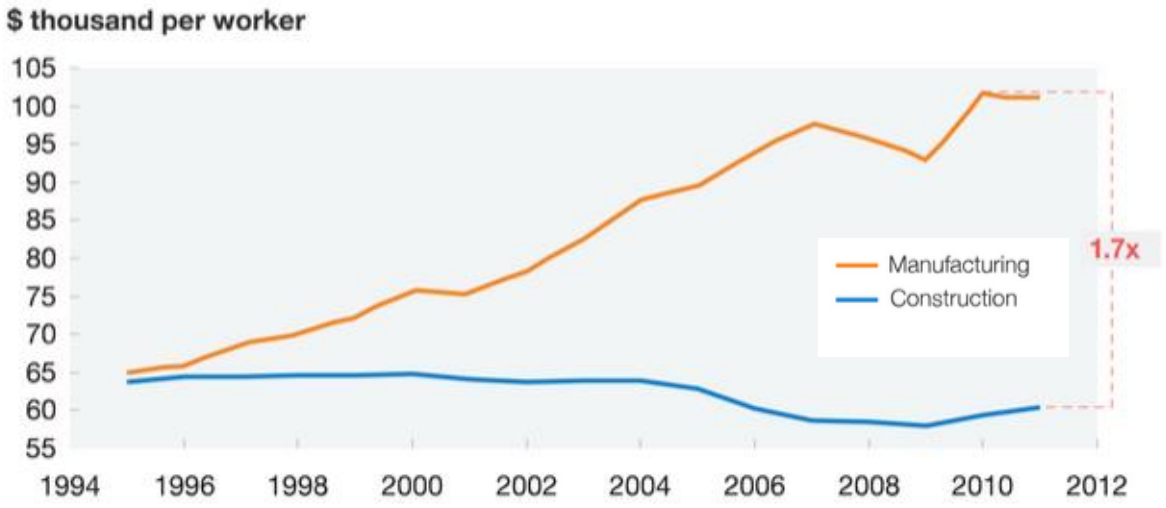


Figure 10. Productivity for manufacturing and construction over time. Source: McKinsey & Company (2016)

The measurement tools of productivity have, however, been criticized for the fact that the quality of what is produced changes over time and this is an aspect that needs to be taken into consideration (Lind & Song 2012). In 2012 Sveriges Byggindustrier initiated a research study with the purpose of thoroughly evaluating the Swedish construction sector. The report "Bad productivity development within the construction sector - A fact or a measurement error" by Lind and Song was one of the reports produced and published in this research study. The report focused on analyzing how the productivity numbers are being measured and whether or not they accurately portray reality. The study concludes that the building price index includes systematic errors that could lead to underestimation of the development of productivity, and the reason for the systematic error is that quality changes in the products are not included in the measurement.

3.3 Industrialized housing construction

One approach to decreasing the construction costs is industrializing the process of housing construction. The idea of an industrialized process for building new houses has been of interest for construction companies since Henry Ford started to use the standard production method in his car manufacturing. Since the early 1990s, several attempts have been made to adopt the knowledge from the mass-production industry and apply it to low-cost housing production (Gann 1996). However, doing this has shown to be hard, as houses differ in many ways from regular products produced in factories since they are not only large and immobile but also often face some unique requirements on site. One major effect of these factors is that it is not normally possible to produce the house and then transport the completed product to the market. However, successful projects can be found in Japan where the housing market has benefited from cross-industry lessons. In Sweden, this process has been successfully used for producing smaller detached houses, so called “catalogue houses” (Lind 2011).

Some of the advantages of industrializing the construction process are economies of scale, technical opportunities and the possibility to control the process (Gann 1996). Industrialized house construction originally consists of three aspects: standardization, prefabrication and system building. However, it is important to find a balance between the standardization and the possibilities of varying the product (Barlow et al. 2003). Today's consumers demand more customer satisfaction and therefore customer focus is becoming more and more important within the industry. When a balance between standardization and customer satisfaction is found, the concept of mass customization is used. Mass customization is more costly than mass production and it is a hard challenge for the developers to lower non-land costs at the same time as they increase the quality.

An industrialized approach is not new and it has been used in several other countries for building houses. In fact, the idea of standardization in construction can be traced back as far as the beginning of the 20th century (Gann 1996). To reduce costs and save time, prefabricated standardized parts were introduced in the construction industry in Europe and North America from the beginning of the 20th century and in Japan from the 1950s.

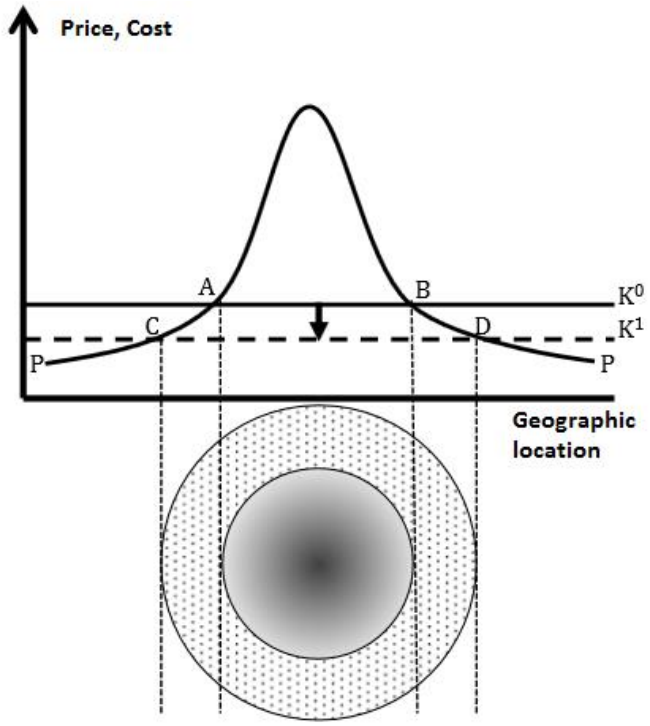
Industrialized housing is sometimes associated with the Million Homes Programme in Sweden during the 1960´s and the criticism from that project has affected people's opinions of the concept of industrialized building (Kadefors et al. 2013). However, lately this opinion is changing as the housing shortage is becoming an increasing problem and the construction industry is looking to make the process more effective and efficient.

3.4 Lack of competition

Conditions for competition on a market can be measured by different indicators (SOU 2015:105). On the supply side the degree of concentration is the most commonly used indicator which measures the size of the market share held by the three, four or five largest companies. Four other indicators used on the supply side are productivity, level of innovation, price levels and difficulties entering the market. On the demand side, the indicators used are customer mobility, customer satisfaction and degree of transparency.

Competition is an important factor on any market as it will affect the development of costs, the productivity, effectivity and quality (SOU 2015:105). Results that can be found on markets with perfect competition are a large number of new products and new ways of making processes more efficient, and these factors are also essential to achieving a market where the demand meets the supply. Within the housing market, increased competition and more players on the market would lead to more construction and lower price levels (SOU 2015:105). On a market with perfect competition, the long term supply will be decided by the intersection of the supply and the demand curves. Decreased construction costs will have a larger impact if the demand has a high elasticity. In most cities there is a lack of developable land, which generates a fixed supply. The elasticity of the supply reflects whether or not the developable land is a constrained resource or not. In the case of low elasticity, lower construction cost will only have a small effect on the number of houses being produced. The theory of supply and demand shows that lower construction cost will mainly affect areas where the supply is relatively elastic. These are the areas in less central parts where it has not previously been profitable to build. In attractive areas the lower construction costs are absorbed by higher prices for the land.

The price of land is mostly dependent on location and access to transportation (Alonso 1964). According to urban economics theory, land in a monocentric city is valued according to travel time, and central location is therefore valued high. In a monocentric city, the profitability of new housing can be displayed according to figure 11. The curve P illustrates the prices of housing, which is higher in the city and lower further out. The line K^0 represents the construction costs and the area between A and B has a Tobin's Q above 1, which indicates it is profitable to build there.



Decreased construction costs will lower the line to K1, resulting in a larger area where it is profitable to build: the area between C and D (SOU 2015:105). Lower construction cost and increased demand will have the same effect, resulting in a larger area being profitable for new development. An increase in demand will affect the P curve positively, pushing it further up, which also would result in a larger area being profitable to develop.

Figure 11. Profitability to build in a monocentric city. Source: SOU 2015:105

However, if the land is a limited resource in the city, lower construction costs will mainly generate an increase in land prices (SOU 2015:105). The model in figure 11 shows that the supply of housing will increase when the construction costs are lowered and it can be applied in cases where the supply of land is not completely inelastic.

One reason for increased costs could be low efficiency in the industry (SOU 2015:105). Another explanation could be the fact that the customers increase their demands on the quality of the product or that the government increase their requirements in terms of energy efficiency and other environmental aspects (Konkurrensverket 2015:4). Increased prices are a result of either supply-related factors such as the low interest rate environment or governmental changes or lack of competition.

The limited competition could be explained by difficulties in entering the market. The report from the Swedish Competition Authority in 2015:4 clearly states the need for improvement on the Swedish market. The low supply of new construction is generating a shortage of housing stock which results in very high construction prices and increased construction costs (SOU 2015:105). Looking at the indicators for measuring the competition on the Swedish housing market, several of them indicate that competition is not functioning well. A high degree of concentration, low levels of import and foreign players on the market, low productivity, high price levels and a low degree of innovation are used to describe the housing market in Sweden.

The problems with competition could be explained by the fact that a few large companies control a large share of the market and there is a lack of foreign players. (Konkurrensverket 2015:4). In 2012, JM, NCC, Peab and Skanska represented 75 % of the total turnover within the 30 largest companies (SOU 2015:105). On a market with only a few national players it is important to attract competition from foreign players. The EU helps companies to become established and compete on other markets within the EU. However, in Sweden foreign players are mostly to be found within plant and infrastructure projects and very rarely within the housing construction industry. The presence of foreign players on the Swedish market has increased in the last few years but they still hold a very small part of the market shares. In the last couple of years, the increased levels of construction have enabled local contractors to compete in the tendering process. These local contractors have been able to lower the construction costs by developing procurement strategies and new building processes, making them competitive players.

3.5 The public housing companies in Sweden

The first public housing companies were founded in the middle of the 1930s when the municipalities started building homes for families with a large number of children (Salonen 2015). Prior to this, the municipality's role within the residential housing had been to support private contractors who aimed at building housing for the poor and the workers who were not willing to spend too much on their living situation. Although the public housing companies were founded in the 1930s it wasn't until after the Second World War that they started to increase their stock of new housing (Boverket 2008). After the Second World War the government realized how bad the housing situation was in Sweden. In order to increase the housing construction across the country, the government initiated economic support to the building companies, especially the public housing companies. The housing policy focused on providing good housing for all and it became a central part of the construction of the welfare state. In the 1960s, the government commissioned the construction companies to build a million residences over a ten-year period - The Million Homes Programme. The goal was to eradicate the housing shortage and to increase the overall standard of housing in the country. The public housing companies became the largest participants in the Million Homes Programme, constructing as many as two-thirds of the new housing.

In 1992, the housing policy changed when the government that had just come into power decided to cancel the subsidies that the public housing companies had been granted (Salonen 2015). The home loans were taken away and the interest subsidy was reduced. The goal was to achieve a market approach operating under business conditions and to transfer the economic risk from the state to the borrowers. Until then, the financial risk had been borne by the state, and the public housing companies had been used as a housing policy instrument. The government now wanted the public housing companies to act on the same terms as the privately owned housing companies. The consequences of the new regulations were that the municipalities could not continue to use the public housing companies as a housing policy instrument, and there was no possibility for the government to create incentives for the municipalities to keep their public housing companies. Since the subsidies had been taken away, the possibility of continuing to construct new public housing became a lot more difficult. From this point on, new construction decreased dramatically, from an already low level.

In 2002 new legislation called “Allbolagen” was instituted with the aim of regulating the public housing companies (Salonen 2015). This new legislation was created in order to prevent public rental apartments being sold and converted into condominium apartments. It also defined what a public housing company had to achieve in order to be classified as a public housing company. It set two conditions that had to be fulfilled: they had to be non-profit and they had to provide property management for their rental apartments. Also, by definition, a public housing company was no longer obliged to be owned or controlled by the municipality. The legislation also stipulated that the public housing companies should enable tenants to have influence over their living environment, and that the public housing companies should strive to provide housing for everyone in the municipality.

In 2011 a new act controlling the public housing companies was put in place (Salonen 2015). The new act repealed the old legislations and the aim was to clarify how a public housing company was defined as well as set demands for how the public housing companies should be managed. Previous to this, the public housing companies had been forced to run on a cost price basis and not run for profit. The new act demanded that the public housing companies should operate on business-like principles which would enable them to compete on the market. As a consequence of the new act, the municipalities could not demand that the public housing companies achieve goals for social responsibility by making non-profit investments.

The public housing companies that exist today are working towards the possibility of providing housing for all of the inhabitants in Sweden, regardless of their income, ethnicity or social class. Today, about 50 percent of the housing supply in Sweden consists of privately owned detached houses, almost 20 percent live in condominiums and about one third rent their apartment (Salonen 2015). There are about 300 public housing companies in Sweden which own 46 percent of all the rental apartments, i.e. about 800 000 apartments.

The public housing companies procure 40 % of the production of newly constructed rental apartments (SOU 2015:105). Within the procurement process for the public companies the major contractors are overrepresented. 40 % of the public company procurements are won by the nationwide construction companies. However, it is very rare that they receive tenders from foreign contractors. One explanation for the low interest in public company procurements could be the fact that other segments of the market, such as condominiums, are said to be more profitable and in higher demand.

3.5.1 Competition within the procurement process for public housing companies

Public housing companies can choose to build new housing in-house or procure the construction through a construction company. Usually the public housing companies do not have sufficient resources for in-house production and therefore construction companies are used (SOU 2015:105). The procurement is controlled by law in the Public Procurement Act 2007:1091, which controls all procurements made by the government, counties, municipalities and public housing companies. The purpose of the Public Procurement Act is to ensure competitive tendering for public purchases and efficient use of public resources. The Act is derived from EU's public procurement directives and focuses on five principles: non-discrimination, equal treatment, proportionality, openness and mutual acknowledgement.

The main reason for choosing framework procurements rather than normal agreements is that framework procurements can be used when the volume of the purchase is not decided and a certain degree of freedom for the buyer is desirable (Konkurrensverket 2010). However, who the buyers and the sellers are needs to be determined as well as the cost per purchased unit.

There are two types of framework procurements to use when there are two or more suppliers: framework with ranking and frameworks with renewed competition (Konkurrensverket 2010). The framework with ranking means that call-offs are made according to a ranking list of suppliers which is specified in the agreement while the framework with renewed competition needs new competition after each round; both types of framework agreements have a regular duration of at most four years. Which framework to choose is illustrated in table 1.

Table 1. Different framework procurements. Source: Konkurrensverket (2010)

		Volume	
		Not determined	Determined
Terms of delivery including the price	Partly not determined	**Framework procurement with renewed competition**	**Framework procurement with renewed competition**
	Determined	**Framework procurement with ranking**	**Framework procurement with ranking *or* normal agreement**

Economic benefits can be achieved when using framework procurement since there are lower transaction costs and the increased volume enables price cuts (Konkurrensverket 2010). However, some argue that, because the volume is undetermined, the total cost actually increases and since the buyers need to cooperate with each other, they will also compromise on their needs.

The problems with the lack of tenders cannot be minimized with the process of public procurements as the process can only ensure that the existing competition is utilized (SOU 2015:105). With an increased number of contactors participating in the tender, the competition will increase. According to the Swedish Competition Authority, the average number of qualified tenders in public company procurements is 4.1 and 20 % of the procurements had only one or two qualified tenders. These figures indicate the need for more players on the market. Furthermore, 40 % of the procurements for public housing companies were won by the three largest building companies on the market: NCC, PEAB and SKANSKA, and only one foreign company has ever won a public procurement for housing construction: Veidekke (Konkurrensverket 2015:2).

The reports from the government SOU 2015:105 and the Swedish Competition Authority both identify several areas for improvement to increase the competition. The development of framework procurements similar to Kombohus Bas is believed to lower the costs and increase the project volumes, which in turn could attract foreign contractors. Furthermore, the special requirements that some municipalities set for new constructions are found to be an obstacle in the process. According to the law from January 2015 in the Planning and Building Act, the municipalities are not allowed to set special requirements for constructions but this law is not applicable when the municipality is the developer or property owner, which they may be in the case for the public housing companies. The ability to set special requirements in different municipalities is seen to be affecting the competition but also hindering any collaboration between the municipalities and the possibilities of using framework procurements such as Kombohus Bas.

Collaboration between municipalities could generate higher values for the procurements, which would attract more players to the market and increase the number of tenders (SOU 2015:105). Increased volumes could also enable standardized construction solutions that could increase productivity within the construction. The benefits of collaborations of the type mentioned above can be described by a simple example from game theory. The value that municipalities could achieve by collectively making certain standardizations is higher than if they chose standardization on their own or specialized options collectively or individually. Therefore, choosing standardization collectively will decrease the production costs and increase the benefit achieved (Fig. 12).

		Municipality 2	
		Special req	Standardization
Municipality 1	Special req	25, 25	25, 20
	Standardization	20, 25	30, 30

Figure 12. Matrix showing the value of standardization. Source: SOU 2015:105

3.6 The case: Kombohus Bas

The framework procurement, Kombohus Bas, is presented by the Swedish Association of Public Housing Companies, SABO (SABO 2014). Kombohus Bas is a relatively new concept which focuses on building prefabricated turnkey ready multi-family housing. So far, three different framework procurements have been developed; Bas, Plus and Mini. The idea behind the concept is to develop a house that is cost-effective to build, has a long lifespan and low costs to maintain. The house should also be energy-efficiently built with high quality material, which results in good quality interiors and low rent levels for the tenants. SABO has procured the Kombohus Bas framework procurement through a bidding contest using a framework agreement with ranking and the winning construction company JSB has a framework agreement to build the housing for a set price (SABO 2014). Public housing companies all over Sweden have been able to order these buildings. Kombohus Bas can be built in 2-4 floors with up to 16 apartments consisting of 2- or 3-bedroom apartments (Fig 13). The fixed price is 12 000 SEK /m^2 useful floor space not including VAT or site and foundation work costs. The price is feasible due to the quantity of the framework procurement. To date, 2 700 apartments has been built within the Kombohus Bas framework procurement and 11 000 apartments are forecasted to be built within the three different Kombohus procurements.

Kombohus Bas is mentioned in the government report SOU 2015:105 as an example of the feasibility of decreasing construction costs in public procurements. The framework procurement enables larger volumes and uniformity, which is a step towards industrial construction methods in the housing industry in Sweden. In the report, this kind of framework procurement is pointed out as one way to increase the number of homes being built in the near future. The Kombohus concept has illustrated the potential for similar projects on a bigger scale, which also could attract foreign contractors. Larger scale procurements could be announced within the European countries and create a market with higher competition

Figure 13. Kombohus Bas. Source: SABO.

3.7 Summary

The construction costs in Sweden have increased more than the CPI in the last 15 years and the average total production cost for a building a rental multi-family housing is 28 827 SEK/m^2 useful floor space including VAT. In an international comparison these levels are high, making Sweden the third most expensive country in Europe to build housing in. One explanation for the high cost levels is the low productivity within the construction industry. Another explanation is the lack of competition on the Swedish market. During the last century the public housing companies have been an important player on the Swedish housing market and with their 46 percent share of the rental market today they have potentially a large impact on the housing shortage situation. The framework procurement Kombohus Bas is one instrument used by the public housing companies to increase their supply on today's market. The effect of Kombohus Bas so far on the construction costs and competition is further analyzed in Chapter 7 but a brief history of the research on Kombohus will be provided in the next chapter.

4. History of Kombohus Bas research

This chapter presents earlier research conducted on Kombohus Bas.

The Kombohus Bas concept was developed and brought into service in June 2011 and to the best of our knowledge the concept has been studied in three research papers.

The first research paper, "*Long term strategic collaboration in the construction industry"*, was a pre-study conducted by Kadefors in 2013 with the aim of presenting the Swedish and Danish experience of strategic long-term collaborations within housing construction. By analyzing five cases and using workshop discussions, the main drivers for long-term collaborative relationships as well as the factors that are required for successful projects are revealed. The result shows that by repeating the processes, the cost and time for production can be reduced and that using prefabrication instead of the traditional on-site production reduces quality risks. Economies of scale have also been found in the framework procurement for industrialized production as the volumes increase. The author also concludes that the intermediary operator, SABO, for instance, is most probably crucial to setting up these framework procurements. These intermediary operators are needed to initiate the industry-level business models to support non-professional companies, since public housing companies most certainly would not be able to create these framework procurements by themselves.

The second research study, *"Public client's experience of industrialized housing"*, was conducted in 2014 by two master's students from Chalmers University (Hallman & Häll 2014). The research focused on public clients' experiences of industrialized housing and the drivers for using a framework procurement like Kombohus Bas. Ten publicly owned companies which had procured the framework of Kombohus Bas were interviewed. The result from the study showed that framework procurement was used because the product is perceived to be affordable and of good quality. The ten companies that participated also indicated that they would be interested in using similar framework procurements in the future. The total production cost for Kombohus Bas in 8 of the 10 interviewed companies ended up between 20 000 - 23 000 SEK/m^2 incl. VAT per living space. At the point in time when this research was conducted, not that many Kombohus had been developed. For this reason, there is a contextual limitation in the research.

The latest research paper,*"The Kombohus project's impact on the local housing markets – Important for future housing of the elderly*", was written in January 2015 by Wimark and Andersson at Stockholm University. The aim of the research was to evaluate how Kombohus has impacted the local markets where it has been built and to look at the households' movement patterns on those markets. By analyzing statistical data from SCB and conducting five phone interviews with companies who had procured Kombohus as well as two phone interviews with planning managers at municipalities, the researchers concluded that the Kombohus has been procured in a variety of municipalities. It showed that Kombohus has been built in municipalities with both high and low levels of new construction. Quantitative data was obtained through a self-administered survey that was sent out to households that had moved into nine different Kombohus projects. The survey showed that the majority of the tenants of the Kombohus were elderly people and that Kombohus has freed up new housing stock that has not been available on the market for a very long time. Larger already existing houses have therefore been released when older people move away from their large villas into smaller Kombohus apartments, creating an increased supply of housing for households with larger families.

4.1 Summary

The research on Kombohus Bas is limited since it has not looked at the public housing companies' own ability to build and whether or not this kind of framework procurement has enabled the companies to build. The thesis from Chalmers University has a contextual limitation in this matter since it was conducted at a time when few projects were completed and the main focus was on the client experience of the Kombohus Bas. The research by Stockholm University focuses on the demand side and the effect Kombohus Bas has had on the movement patterns. The research also looks at the supply side but the methodology used is statistics on a municipal level and only a sample of the companies participated in the study. Consequently, there is a methodological justification for analyzing the supply side factors using another methodology and including all the public housing companies who have procured Kombohus Bas. The present research will provide a comprehensive analysis of Kombohus Bas as it uses a mixed method approach to analyze whether these framework procurements for turnkey ready multi-family housing can increase the supply on the Swedish housing market. Kombohus Bas is used as a case and focus will be on the supply side factors. The construction costs and future building obstacles will be examined in depth, which has not been done in the previous research.

5. Methodology

This chapter will present and discuss the chosen methods used in the research. The course of action will be explained in detail along with sampling techniques and ethical considerations.

5.1 Methods for collecting data

The research strategy should always be chosen in order to enable the researcher to answer the research question (Saunders et al. 2009). When using more than one research method the research strategy is called a mixed methods approach. Qualitative and quantitative techniques are combined within the same project with the aim of answering the research question (Bryman 2012). In the last few years, the mixed methods approach has become more popular to use in research studies and is used in this study because it enables the research topic to be examined in two different ways. The findings in the qualitative analysis have been used to explain and illustrate the findings in the quantitative analysis. Using the two approaches also enhances the credibility and increases the integrity of the findings. Choosing a mixed methods approach meant that it was important to relate and integrate the results from both methods in the analysis. In this research, the methods have been implemented sequentially (Fig. 14). An examination of secondary sources has laid the foundation for both the qualitative and the quantitative research. The quantitative part is a questionnaire followed by the qualitative study with semi-structured interviews. The quantitative method has generated numerical data while the qualitative method was used to collect non-numerical data such as explanations of people's thoughts and patterns of behaviour.

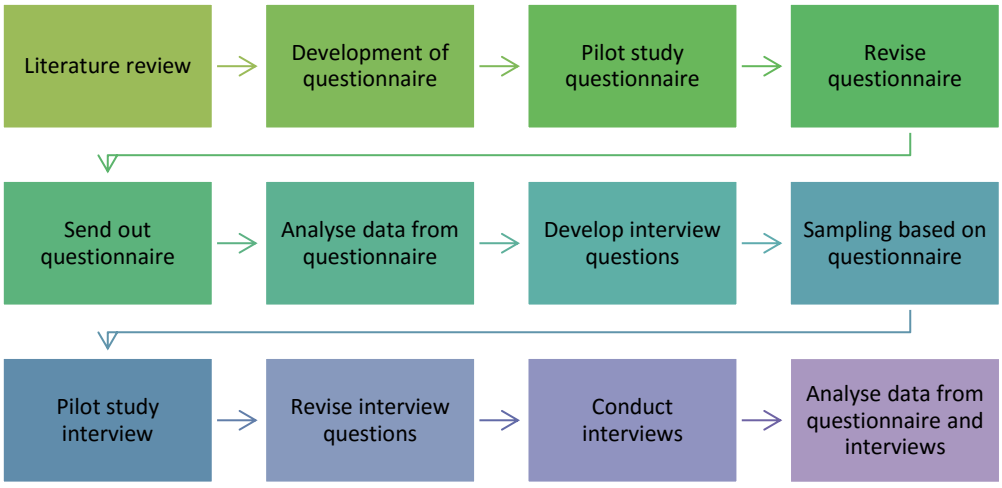


Figure 14. Methodology schedule.

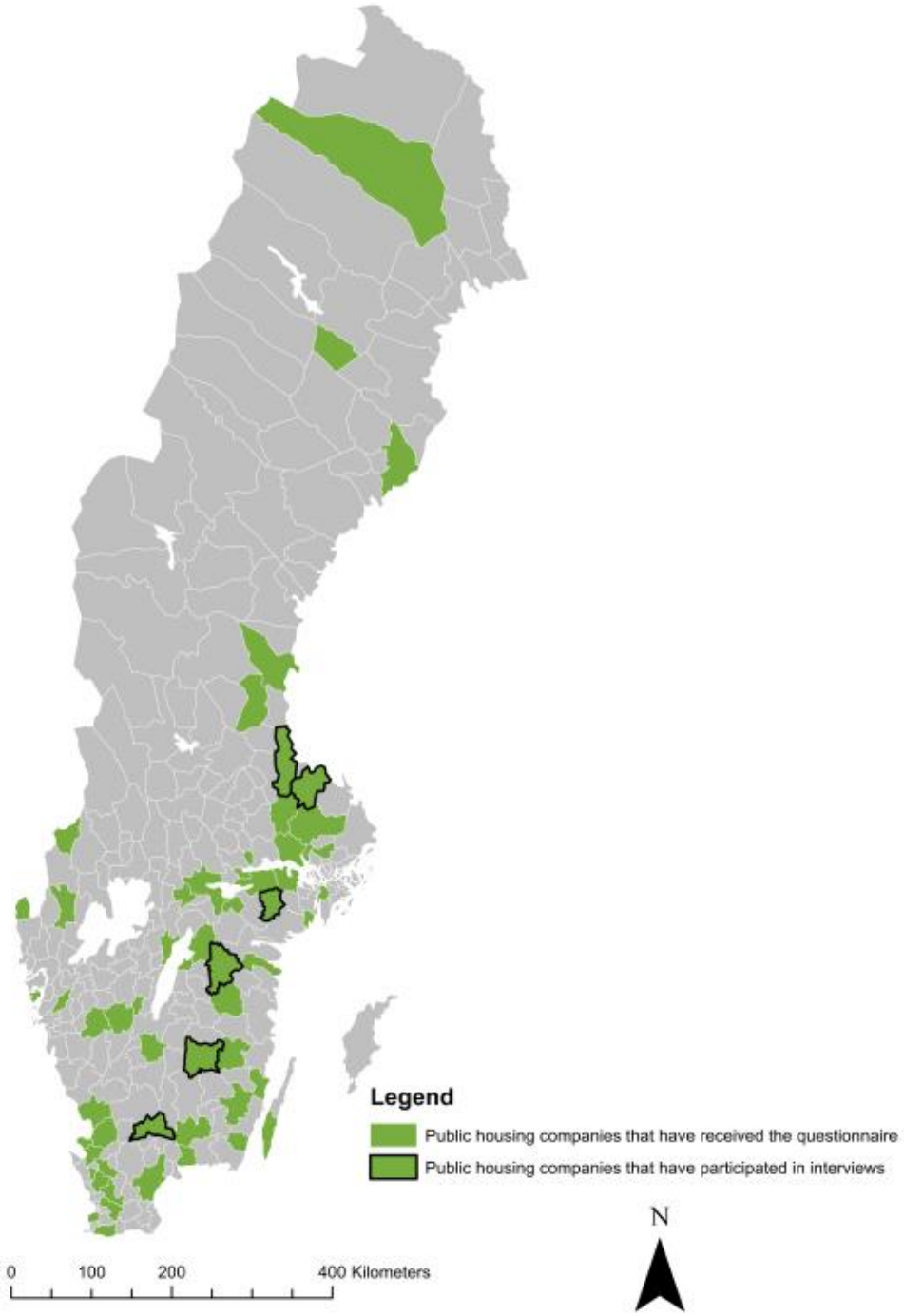


Figure 15. Map of Sweden with participants in the interviews and who received the questionnaire

5.2 Literature study

An analysis of the field of research was the first step in this study. Secondary data was collected through published scientific articles, master's theses and books. These were found through the search engines Primo, Scholar etc.

5.3 Questionnaire

The quantitative data was gathered through a questionnaire in the form of a self-administered Internet survey. This method has enabled us to reach all public housing companies which have used the framework procurement of Kombohus Bas in Sweden as they are geographically scattered all over the country (Fig. 15).

5.3.1 Respondents in the questionnaire

The questionnaire was sent out to the CEO at the 58 companies who had procured Kombohus Bas. The size of the population allowed the total population to be used rather than a sample. The possibility to collect and analyze the data from every possible case in the group provides a true measurement of the population.

5.3.2 Construction of the questionnaire

The design phase of the questionnaire is a crucial step in the research strategy as the design will affect the response rate, reliability and validity (Saunders et al. 2009). It is important that all the respondents interpret the questions in the questionnaire in the same way and therefore a questionnaire is most suitable for explanatory or descriptive research. The data that has been collected is both opinion and behavioural data. This will explain not only what the respondents think but also what they actually do. The most important aspect when constructing the questions is to make sure that the questions will help to answer the research question and will be valid for measuring what one wants to measure. The software program "Easyresearch" was used to design the questionnaire and to collect and code the obtained answers. The questions in the survey were divided into three main areas:

- The history of construction within the company
- Kombohus Bas
- Future constructions and obstacles

Matrix questions combined with quantity and list questions were used as closed questions. For each question it was possible for the respondents to add a comment if there was something they did not understand or wanted to add to the study. The companies were also asked to attach their calculations from their Kombohus Bas projects. These calculations have been analyzed together with the results from the questionnaire and integrated into the results.

The questionnaire can be found in its original Swedish design in appendix 4 along with a translated version in English.

5.3.3 Implementation

The questionnaire was administered through e-mail with a direct web link during three weeks in February 2016 and a pre-survey contact was made through the intranet a few weeks beforehand. Since all the companies in the survey are located in Sweden the questionnaire was conducted in Swedish.

5.3.4 Data processing

The data collected through the questionnaire has been analyzed using both univariate and bivariate analysis tools. The results are presented in frequency tables and diagrams. The themes and comments found in the questionnaire have laid the foundation for the questions in the interviews.

5.3.5 Drop out

A pilot test was run to refine the final questionnaire and increase the response rate. It was used as a trial run with the aim of checking for unclear questions, the clarity of instructions, the time it took for respondents to conduct the questionnaire and whether the layout was clear and attractive. Follow-up e-mails were also sent out after the end of the first and the second week. Out of 58 companies 39 answered the questionnaire, which is a response rate of 67%. Such a high response rate indicates that there is a high willingness among the public housing companies to participate in the study and the discussion regarding the housing situation in Sweden.

5.4 Interviews

Themes that were found in the questionnaire have been further analyzed through semi-structured interviews. The qualitative data received from the interviews has been used to explain what has been explored in the survey and it has specifically helped understand the relationship between the variables. Interviews are a good data collection option when the questions are complex and incorporate a majority of open-ended questions. They allow the researcher to find out people's view on things and are therefore a good tool when trying to find explanations for certain behaviours (Saunders et al. 2009).

5.4.1 Participants in the interviews

When selecting interviewees, a sampling method has been used. This reduces the amount of data that needs to be collected and it is sensible to use a sample when it is impractical to include the total population or if there are budget or time constraints (Teddlie & Yu 2007).

Sampling techniques can be divided into probability sampling and non-probability sampling, also called purposive sampling. Probability sampling is mainly used for quantitative studies and is not recommended to use in population sizes less than 50. Purposive sampling is more aimed at qualitative studies where the aim is to achieve depth of information by focusing on a small number of cases and statistical inferences do not have to be made from the sample.

In this study a purposive sampling technique was chosen as this technique allowed us to select cases based on specific purposes rather than randomly (Teddlie & Yu 2007). Within purposive sampling there are different categories; however, in this research the strategy called "sampling to achieve representativeness or comparability" was chosen. This strategy was chosen because it allowed us to select a sample that represents a larger group and find patterns that are typical for a specific group but also to compare differences between groups. There are multiple procedures that can be conducted within the strategy for "sampling to achieve representativeness or comparability" and in this study "stratified purposive sampling" has been used. The purpose of this procedure is to capture characteristics of particular subgroups and illustrate variations and common areas between the subgroups (Patton 1990). It is found to be a good technique in situations where enough information is known to identify variables that may influence the questions in topic. In this research the variable of interest was whether or not the companies had built new housing recently.

The information obtained from the questionnaire was used to divide the companies into subgroups on the basis of the time interval since they had built new housing prior to Kombohus Bas. The categorization was less than 3 years, 3-6 years, 6-11 years, 11-20 years and more than 20 years ago. The first and last group were then chosen to be included in this study as they represented the extremities. Three companies from each of the two strata were then selected to take part in the interviews.

Table 2. Participants in the interviews.

Company	Municipality	Interviewees
Stångåsstaden AB	Linköping	Fredrik Törnqvist
Gavlegårdarna AB	Gävle	Lars Bergmark
Älmhultsbostäder AB	Älmhult	Tore Vestergård
Flens Bostads AB	Flen	Arne Fältin & Jocke Hård
Tierpsbyggen AB	Tierp	Roger Kjettselberg
Witalabostäder AB	Vetlanda	Eric Engelbrektsson

The number of interviewees was chosen with the aim of achieving a thorough picture but there is always a balance between the quality and the number of interviewees since performing the interviews is time consuming. The geographic distribution of interviewees is illustrated in figure 16.

Figure 16. Map of Sweden with the companies who participated in the interviews.

5.4.2 Construction of the interview questions

The interview questions were constructed based on the answers that were obtained from the questionnaire. The purpose behind the topics of the questions was to explain and illustrate the findings from the quantitative analysis. The questions focused on five main topics:

- The housing situation in the municipality
- Kombohus Bas and opinions on framework procurements
- Industrialized housing construction
- Rent levels
- Competition
- Future construction and obstacles

A pilot interview was first conducted with a colleague at SABO to practice interview technique and refine the questions.

A copy of the interview guide can be found in its original Swedish version in Appendix 3 along with a translated version in English.

5.4.3 Implementation

The interviews were conducted in a semi-structured way which enabled flexibility and the possibility to deviate from the interview guide that was used. The aim was to obtain rich and detailed answers where the interviewees' point of view was in focus and the interview guide was used as a tool to remember the different main topics and help with the structure of the interview. New follow-up questions were added along the way.

The interviews were held with the CEOs in five of the public housing companies and with the project developer in one of the companies. One of the companies also chose to bring along the project leader for Kombohus Bas. The interviews were held at their own offices over a three week time span in February and March 2016; each interview lasted approximately one hour and was recorded and transcribed. All participants consented to being audio-recorded and to their names being used in the report. A possible disadvantage of recording the interviews is that the openness of the participants is limited but there are also advantages. When using a recorder, the interviewers can focus on the questions and what the participants are saying rather than trying to take notes. It also enables a more thorough analysis of the answers and the possibility to iterate the analysis process.

5.4.4 Data processing

The transcribed interviews were coded and analyzed according to grounded theory which is a commonly used framework for analyzing qualitative data (Bryman 2012). The transcribed material was analyzed by coding the data in order to find concepts that could be grouped. Connections between concepts and categories were then found when iterating the analyzing process.

5.5 Reliability, validity and ethical considerations

In this master's thesis, both the reliability and the validity have been aspects to consider. The methods of collecting data have been improved by conducting pilot studies where both the interpretation of the questions and the presentation of the questions have been revised and improved. An interview guide was used in order to achieve a higher degree of structure and thus minimize observer errors which may compromise the reliability.

Ethical considerations have also been addressed in this study. An informational letter was sent out together with the questionnaire in order to assure the respondents on the purpose of the research and how the answers will be analyzed. When conducting the interviews the participants were informed of the purpose of the study and asked if they consented to the information acquired during the interviews as well as their names being used in the report.

6. Results

This chapter presents the results from the survey, interviews and the calculations from the Kombohus Bas projects. The findings from the different methods are integrated and broken down into seven themes. Firstly, the building history in the companies that procured Kombohus bas is presented followed by the reasons for choosing Kombohus Bas. The demand and production cost aspects are then presented along with the financial and development aspects. Finally, the companies' views on the future are presented.

6.1 The public housing companies who have procured Kombohus Bas

In total 58 public housing companies, geographically scattered all over Sweden, have procured Kombohus Bas. Together they have built 2 700 apartments in total. The survey in this research had a response rate of 67 %. Together the respondents have procured 1 522 apartments with an average of 40 apartments per company. When looking at the construction history of the companies which have procured the Kombohus Bas, the respondents in the survey were asked when they last built new housing prior to Kombohus Bas; see question 2 in appendix 4. The results show that there is variety among the companies (Table 3). Almost half of the companies who procured Kombohus Bas have built new housing in the last couples of years but almost 18 % of them have not built anything for more than 20 years.

Table 3. The construction history among the companies.

Years since they last built prior to Kombohus	Percent
Less than 3 years ago	46
3 years – less than 6 years	23
6 years – less than 11 years	10
11 years – less than 20 years	3
20 years or more	18

Figure 17 illustrates the number of apartments of Kombohus Bas being procured. The results from question 1 in appendix 4 show that most of the apartments were built by companies who have recently built other housing. However, over 200 apartments have been built by companies that have not built housing for 11 years or more.

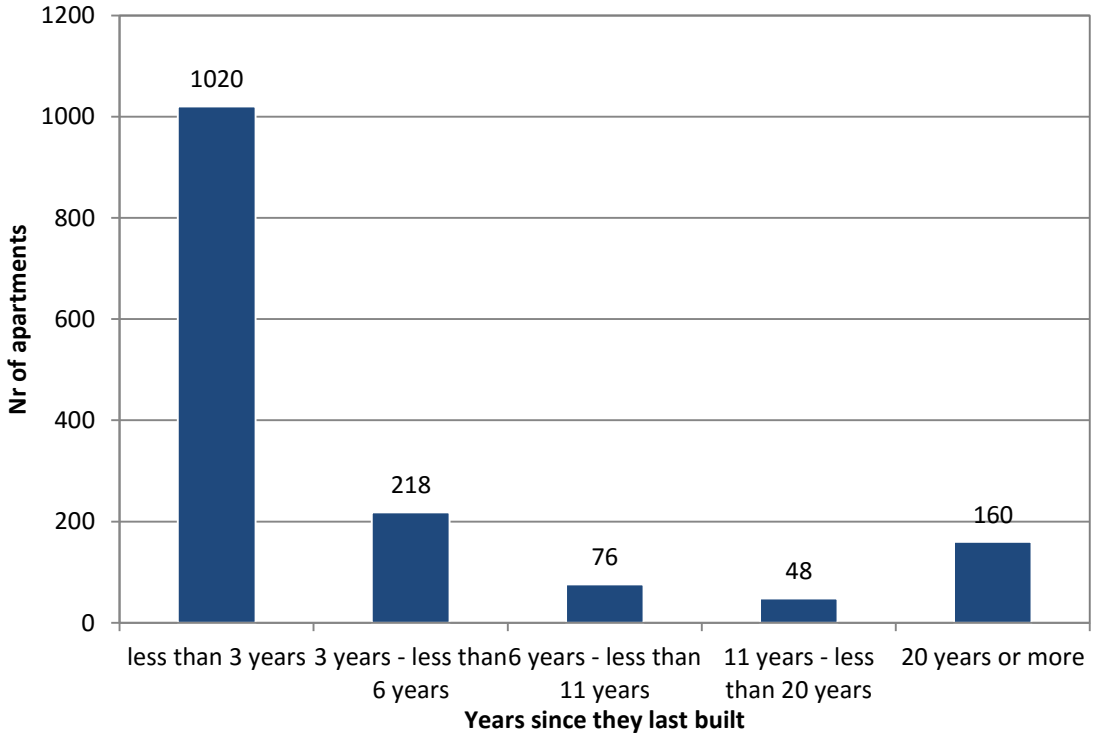


Figure 17. Number of Kombohus Bas apartments and construction history.

Among the companies that have built within the last five years, 80 % have built multiple family housing of four floors or less (question 3 appendix 4).

The respondents who had not built within the last 6 years were asked about the reason for this, question 4-6 appendix 4.

Among the companies that have not built for between 6-20 years, the main reasons were high construction costs and the high risk of impairment (Fig. 18). Among the companies which had not built for more than 20 years, the main reasons were low demand, high construction costs and low willingness on the part of the tenants to pay (Fig. 19). The results also showed that most of these companies did not see the cost of land or financing the projects as obstacles in the building process. The required rates of return were not perceived to be the reason behind the non-existence of new production.

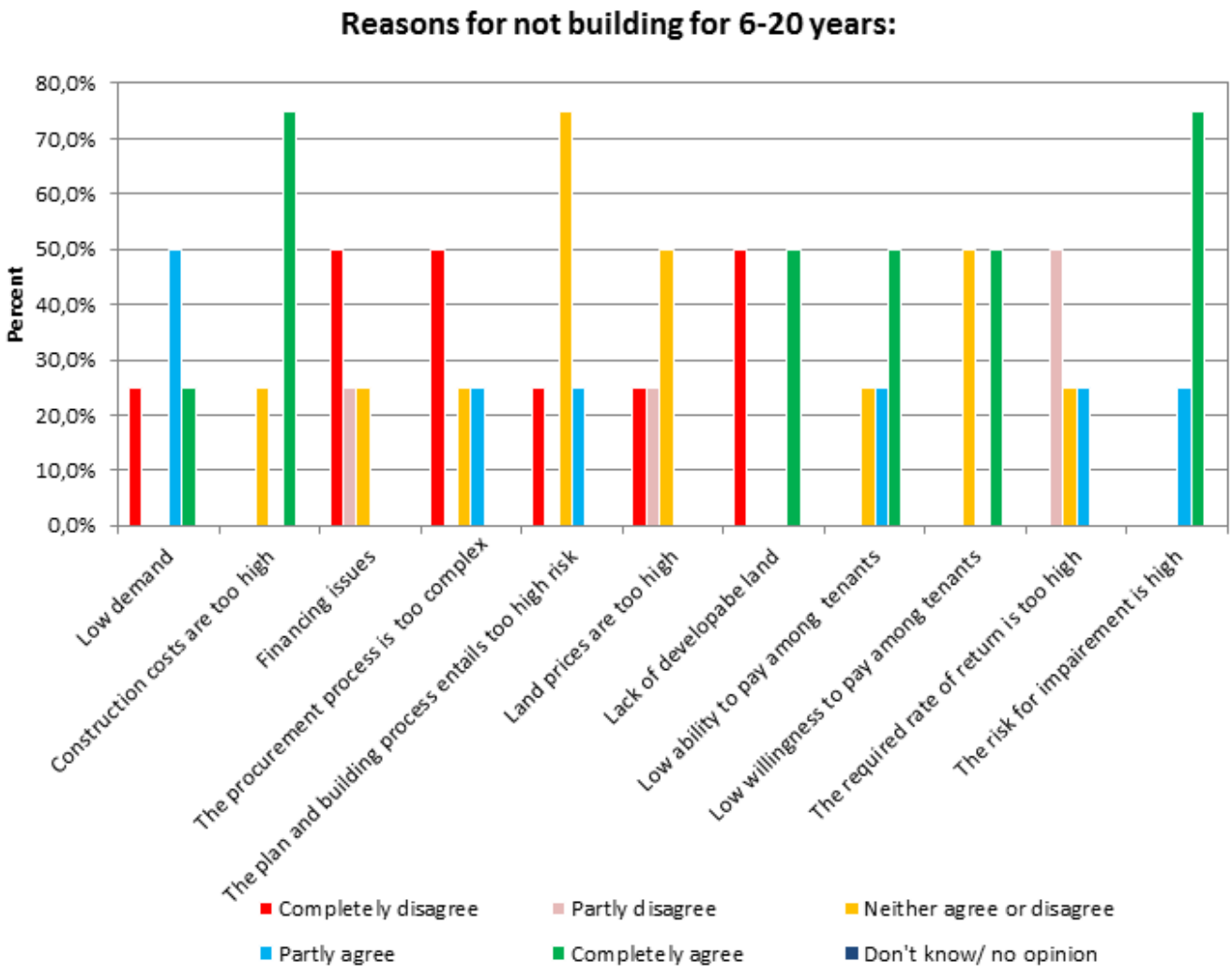


Figure 18. Reasons for not building for 6-20 years.

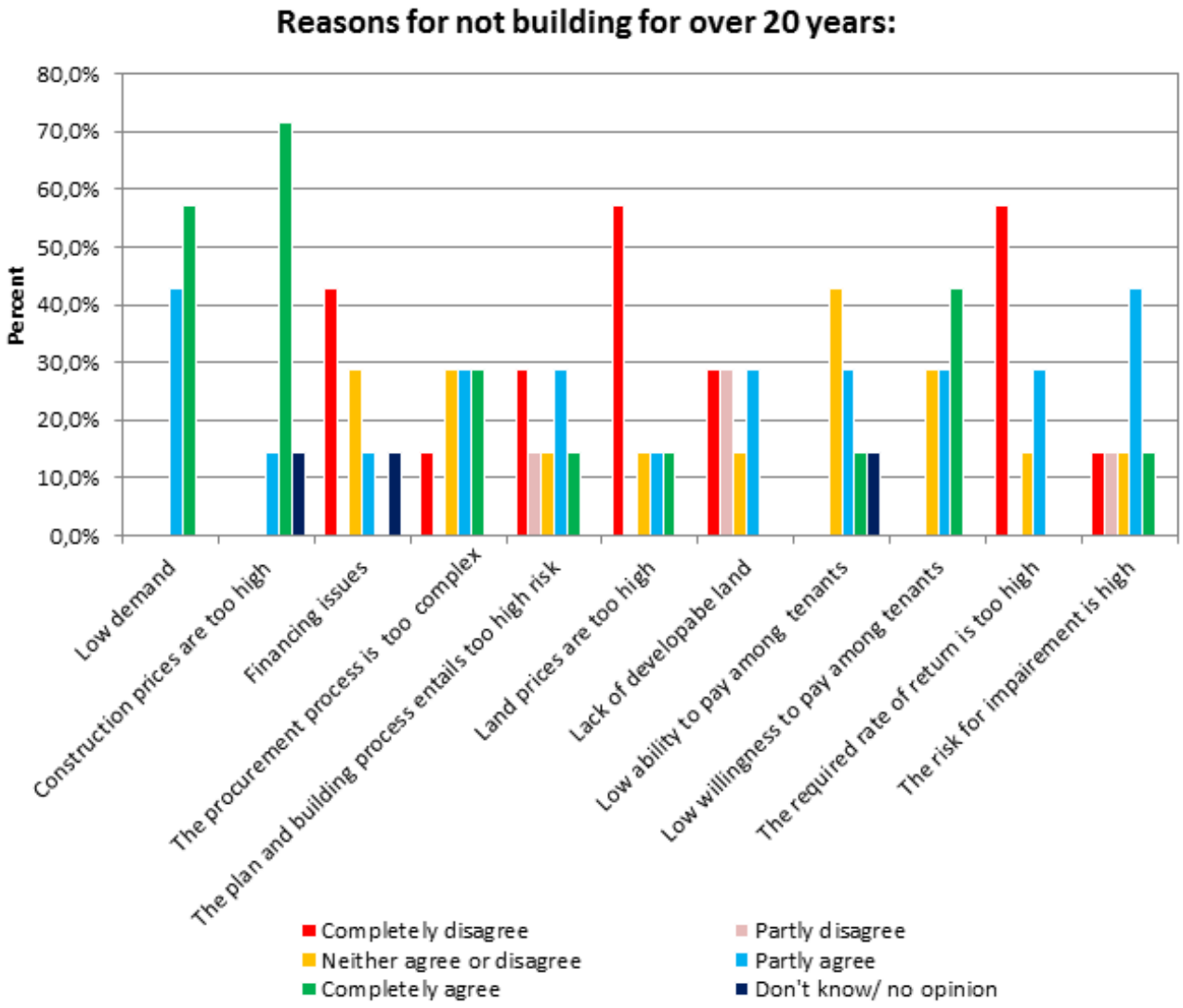


Figure 19. Reasons for not building for over 20 years.

The respondents in the interviews were asked if they have a demand for housing in their municipality, question 2 appendix 3.

All respondents say that there is a shortage of housing in their municipality. They have owner directives to build between 30-150 new apartments per year in the coming years and the main reason for the housing shortage is the increase in population. Among the municipalities which have not constructed anything for more than 20 years prior to Kombohus, the housing shortage is a new situation that has evolved in the last few years. It was not long ago that they were forced to demolish housing due to an oversupply.

"There is a shortage of certain types of dwellings, small and cheap apartments in particular. But even if we can't build those kinds of dwellings we can get the households' movement patterns going. Homeowners move away from their villas and families with children can then move in to the villas from their condominiums. Some of our tenants then may choose to move into those condominiums which results in smaller rental apartments being released onto the market." – Respondent 1

"The biggest challenge is to change the company from being property managers with bad finances and suddenly we need to have both the competence and money to build and manage the projects. It is a problem but so far we have managed." – Respondent 2

All the companies who have a history of construction say that there is a high demand for new apartments. One of them says that the new apartments are leased a year prior to the move- in date, indicating the high level of demand. Another says that there are high expectations from the trade sector as well as from politicians to construct new housing.

6.2 The choice of Kombohus Bas

The interviews show that Kombohus Bas have been placed in central locations in all the municipalities which have not built anything for more than 20 years prior to Kombohus Bas. In the municipalities that have built housing recently, Kombohus Bas have been put on the outskirts of the city (Fig. 20).

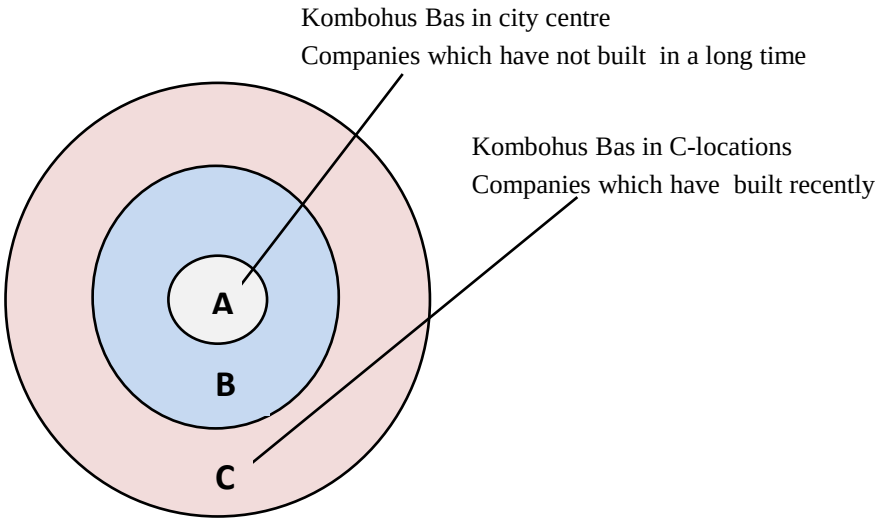


Figure 20. The geographic location of the Kombohus Bas.

The joint reason for this is that they don't fit into the city blocks. One company is using the housing to densify million home programme areas. Another says that they fit in C- locations where there is plenty of land.

The survey shows that the main reason for choosing Kombohus Bas is the fact that it shortens the timeline from idea to a finished product followed by an uncomplicated ordering procedure as well as the low construction cost (Fig. 21) (question 9 in appendix 4).

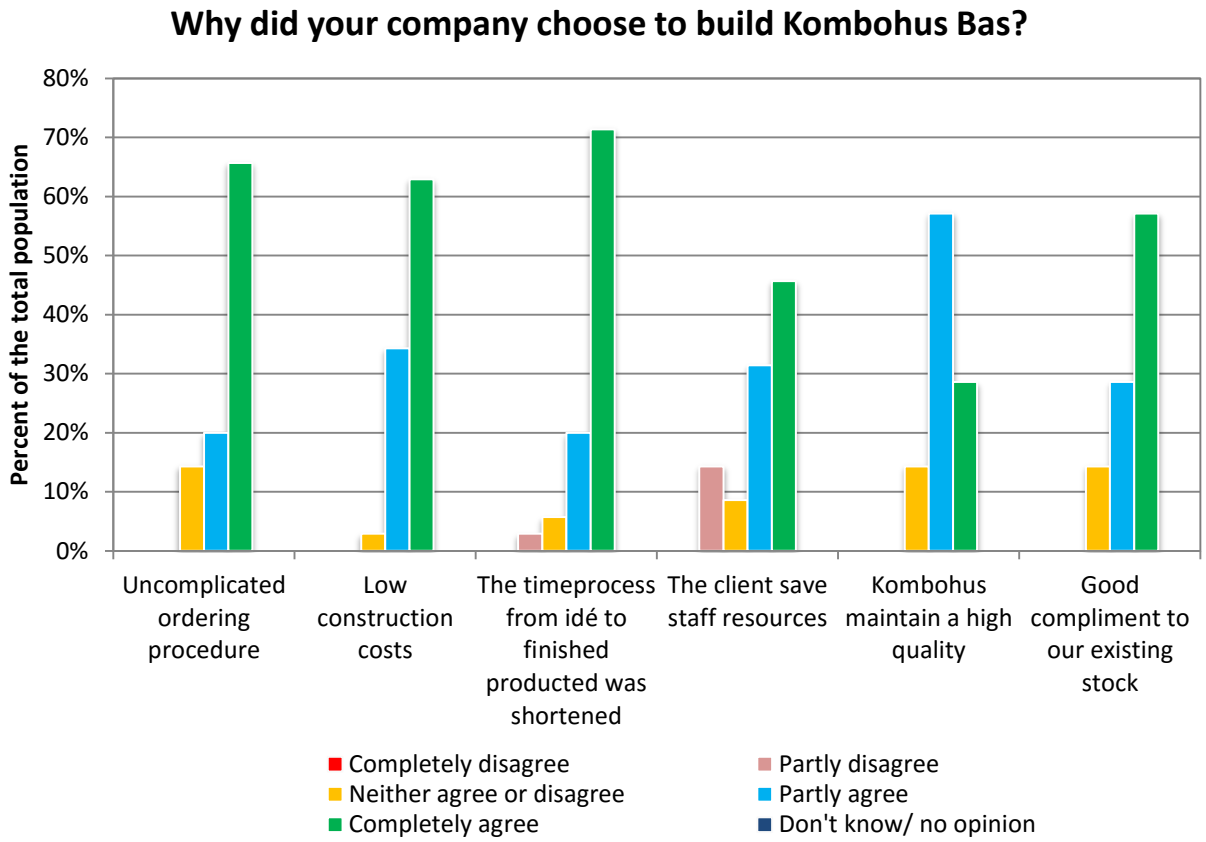


Figure 21. Reasons for choosing Kombohus Bas. Aggregate level.

Within the subgroups, the main reason for choosing Kombohus Bas among the companies which have produced within the last three years is the shortened timeline from idea to finished product and the fact that it's a good complement to the existing stock. Within the group that has not produced anything during the last 20 years the main reason for choosing Kombohus Bas was the uncomplicated ordering procedure, a good complement to existing stock as well as the low construction price and shortened timeline. On this question the results from the survey are consistent with the results from the interviews. One company says that they don't have the resources or experience to build new housing without help.

To build something on their own would require consultants which would make the process much longer and more expensive. Another company says that because the product is already procured less resource is required and since the project has a set price any surprises are minimized.

"To lock the calculations and be able to get started right away was absolutely crucial"- Respondent 3

All of the companies which have recent experience of building new housing said the house is used as a good complement to existing stock and that Kombohus Bas has turned out cheaper than housing they normally develop. Because of this they have been able to construct in areas where they would not normally have been able to build. One company says that if they have a good land spot it is very easy to get the house up and running with relatively few of their own resources. In a normal project they need to draw something up and then they need to develop the development plan followed by finalizing the drawings. It is a couple of month's work to get to the point of having a finished product ready to build and Kombohus Bas allowed them to save at least half a year on this design stage.

One company says that they chose to build Kombohus because they wanted to show that it was possible to build housing at a lower cost by using economies of scale and that by working together with SABO you don't have to invent the wheel each time a house is constructed. They believed that this would not have been possible to do without SABO. Another company said that a similar project has ended up on the same construction cost levels because the Kombohus has affected the market and made other contractors rethink and lower their prices.

"A clear signal about SABO identity, we can together" – Respondent 2

With regard to the quality they are all very pleased with the product. One company says that Kombohus Bas does not have lower standards than anything else they build. The cost has not been cut by using fewer quality products, but good quality is achieved by repetition and industrializing the product.

The respondents in the survey were asked if Kombohus Bas has enabled them to carry out new construction, question 7 appendix 4. Among the respondents in the survey 42 % of the companies' would not have been able to construct new housing without Kombohus Bas (Fig 22). When looking closer at the companies that answered they would not have been able to build without Kombohus Bas, the summarized numberof dwellings that would not have been built is 526 apartments.

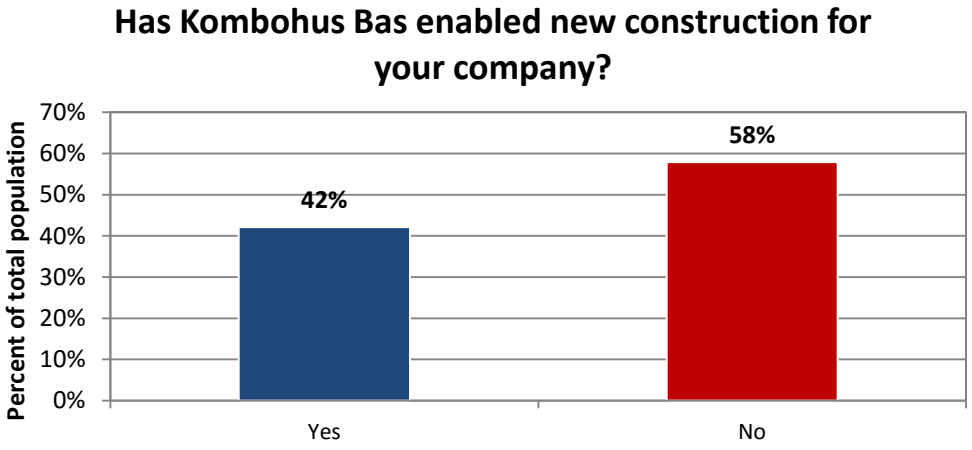


Figure 22. Has Kombohus enabled new construction for you? On an aggregate level.

Looking closer at the construction history of the companies, it is clear that Kombohus Bas mainly enabled construction for the companies that have not built within the last few years (Fig 23).

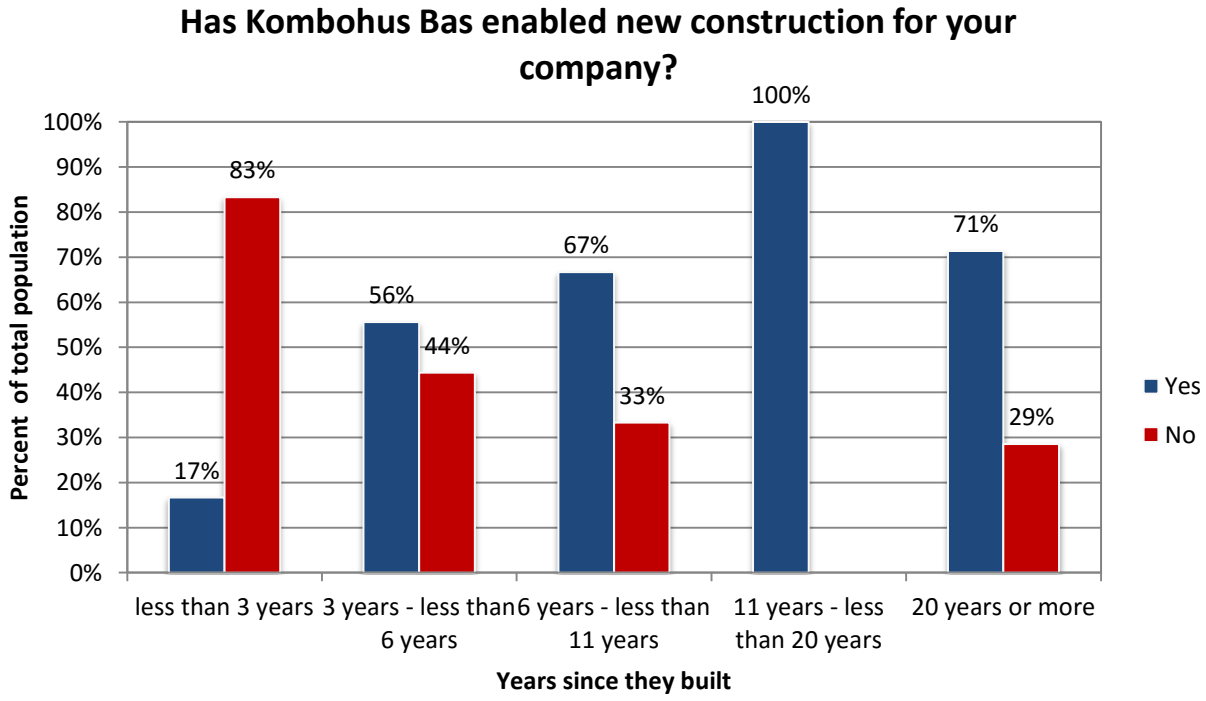


Figure 23. Has Kombohus enabled new construction for you?

The interviews show that, among the group of companies who have a history of new construction, all of them state that the Kombohus Bas has enabled them to build more housing and in areas which they would not have been able to build otherwise. By using Kombohus Bas they have been able to build enough housing to reach their owner's directives as well as keeping the rent levels at a decent level. It has enabled them to construct housing for everyone not just exclusive rental housing in central locations. One company says that it has enabled construction in areas which have a higher required rate of return and where traditional building would lead to impairments.

"In our city there are possibilities to build. Kombohus however, has meant that we have been able to build in C-locations which previously were not possible to achieve profitability in." – Respondent 4

Among the interviewed companies which have not built for more than 20 years, none would have been able to build without Kombohus Bas. One of the companies had made calculations for constructing in the traditional way and had come to the conclusion that it would never work. Another company says that they had no other options at the time of procuring the Kombohus Bas.

"Probably it would have become more expensive and thus we would have suffered from impairments which would have resulted in less construction in the future" – Respondent 5

In the survey the companies that had not been able to build without Kombohus Bas were asked about the reason for this, question 8 appendix 4.

The main reason for not building is high construction costs (Fig. 24). Many of the companies completely disagree that it would be because of lack of experience.

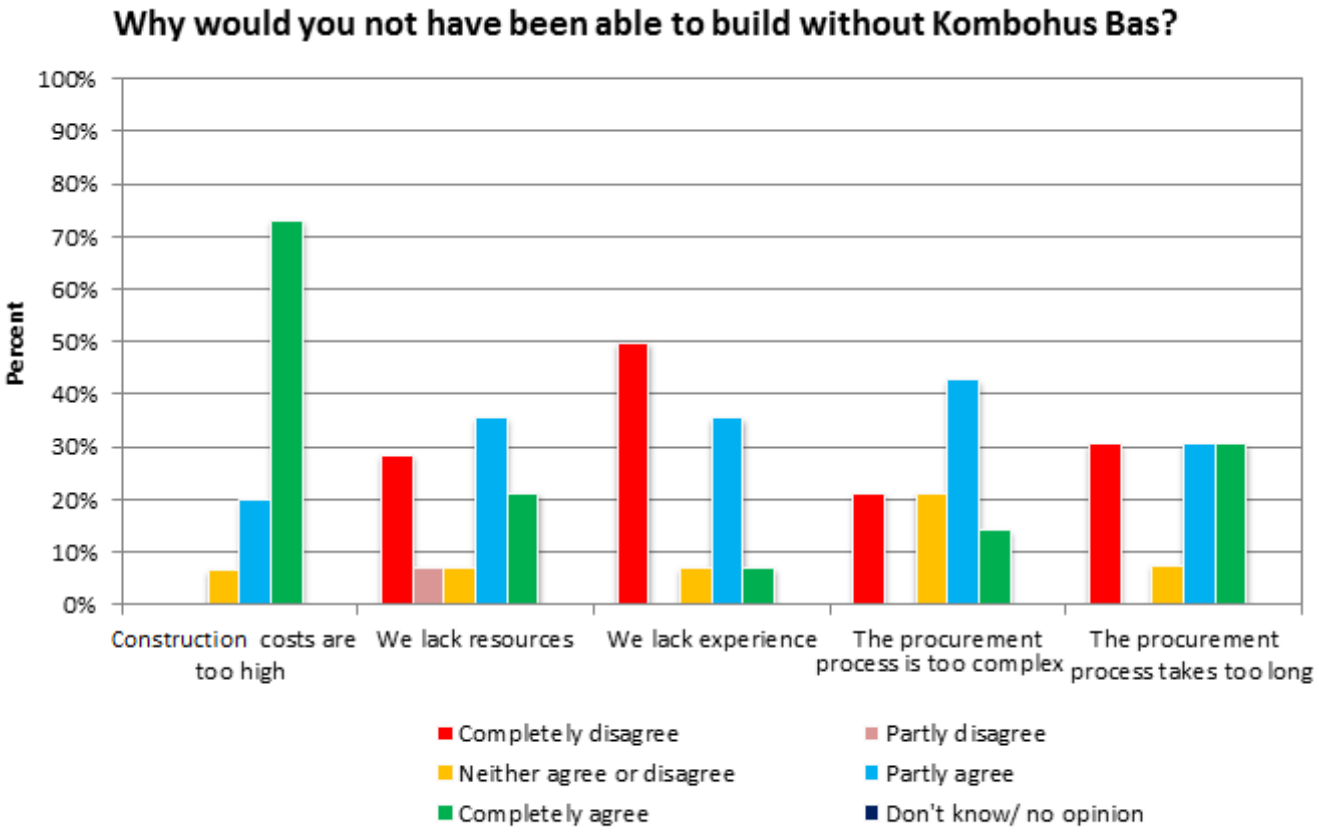


Figure 24. Why would you not have been able to build without Kombohus Bas?

The respondents in the survey were also asked what the single most important factor for choosing Kombohus Bas is, question 10-11 appendix 4.

The results show that the most important factor behind choosing Kombohus Bas varies between the companies depending on whether they were able to produce without Kombohus Bas or not (Fig. 25).

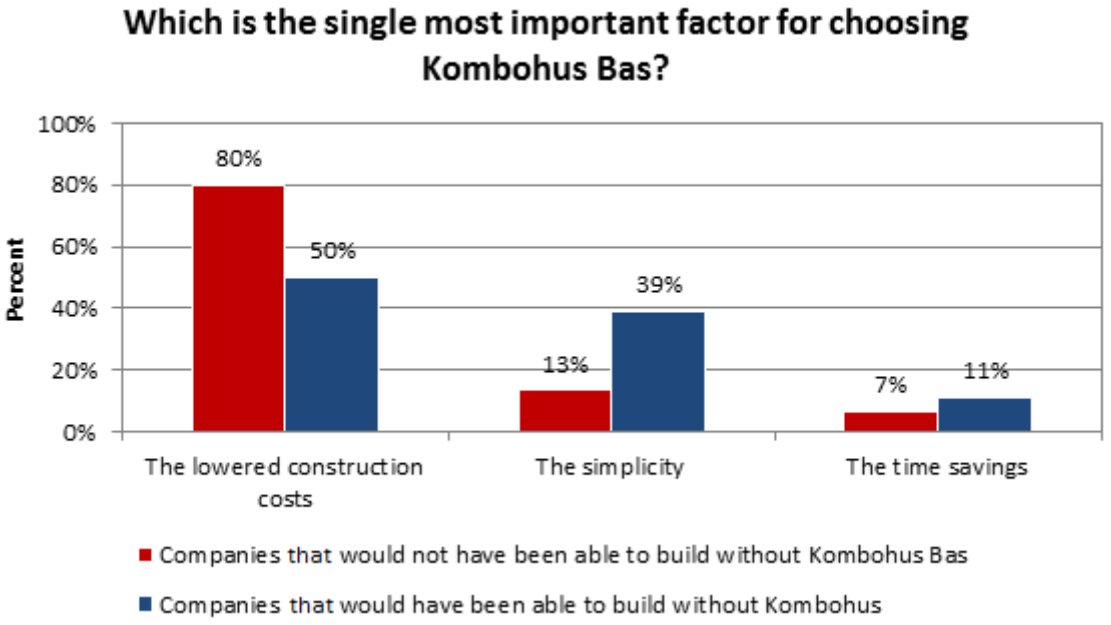


Figure 25. Which is the single most important factor for choosing Kombohus Bas?

Within the group of companies that would not have been able to build without Kombohus Bas, 80% say that the lowered construction costs are the main factor. Within the group of the companies that would have been able to build without Kombohus Bas, 50% think construction costs are the main factor while 39% believe it's the simplicity.

6.3 Demand aspects of Kombohus Bas

The interviewed companies were asked if they had a target group for Kombohus Bas and who had moved into the apartments, question 2 appendix 3.

Three of the companies expected that a lot of older people would sell their houses and move into Kombohus. However, the results have been a mixture of old, young and families.

"We have had a large variety among the tenants. It's been everything from people born in the 90s to people who are 90 years old" - Respondent 2

One of the companies planned that people in their 70s would move in and that this could be a sort of home for the elderly. Because of this, they chose to include a lot of extras, for example extra car parking facilities, better ventilation, and extra storage facilities. Another company has had homeowners as a target group. If the company could get the older generation of homeowners to sell and move into Kombohus Bas, this could enable families with children to move into the houses. The result from this company was that one third of the tenants were from this group of older homeowners, another third from outside the municipality and the last third from other rental apartments in the area. Two of the companies did not have a specific target group for Kombohus and one of the companies has a major employer in the municipality so the target group is their employees.

The respondents in the questionnaire were asked to send in their calculations for the Kombohus Project. Based on this information the rent levels for Kombohus Bas could be established.

The rent levels for Kombohus Bas vary between 1400 - 1500 SEK/m^2/year with an average level of 1444 SEK/m^2/year. The interviewed companies were also asked for the rent levels of their existing stock, not including new production. These varied between 880 - 1050 SEK /m^2/year. Among the companies which have produced new housing prior to Kombohus the average rent levels for the new production were 1550-1800 SEK/m^2/year. The rent levels for Kombohus bas are presented in figure 26 as well as the results from the interviews where the rent levels for their old stock and other new production is displayed.

A text explaining how to interpret the boxplot diagram is found in Appendix 5.

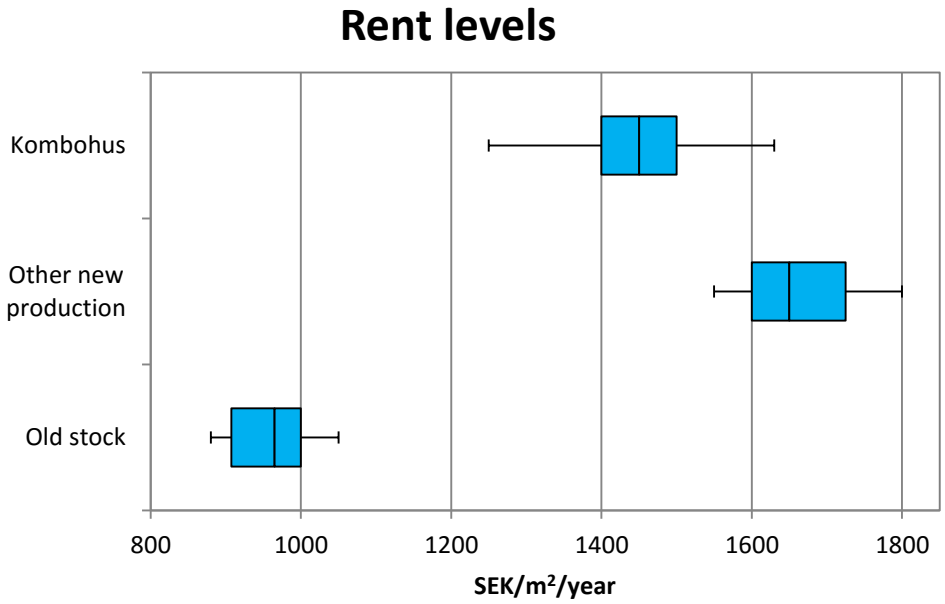


Figure 26. The rent levels in Kombohus Bas, other new production and old stock.

Among the companies that have not constructed for many years they all point out that as it's been more than 20 years since the company has built anything, the rent levels differ a lot between existing stock and new production.

All the interviewed companies have negotiated without problems with the Swedish Union of Tenants when setting the rent levels for Kombohus Bas. According to one company, the rent levels depend on the required rate of return. They know the costs for the construction and depending on the required rate of return the rent will vary. This level is then used to negotiate with the Swedish Union of Tenants. Another company says that they wanted to keep a similar rent level to that of the private building companies in the municipality. They did not want to end up in a position where they push down the rent levels so low that it would be impossible for the private companies to construct new rental apartments.

"We don't want to sabotage the market as we can't carry the whole responsibility for new construction ourselves" – Respondent 6

One company says that subsidies from the government would not help. The difference between the rent levels from old stock with new housing is too large.

The interviewed companies were asked about the willingness to pay and ability to pay among their tenants, question 21 appendix 3.

One company says that they have a large group of people whose ability to pay for newly constructed rental apartments is too low and the willingness to pay among the older people who own their own houses has been low but it is changing. Many of the companies say that the monthly rent for older people who presently own houses will increase from around 4000 SEK to 9000 SEK if they moved into a newly developed rental apartment and because of this they have a low willingness to pay the rent levels. It's important that they are both able and willing to pay the rent levels. Moreover, many tenants do not prioritize housing and instead prefer to spend their money on something else; this generates a low willingness to pay. In many of the municipalities the rent levels for new housing are almost double the rent levels in the old stock and the companies think it will be interesting to see how many of them will be willing to pay twice as much to live in a new apartment.

6.4 Production cost aspects of Kombohus Bas

The respondents in the questionnaire were asked to send in their calculations for the Kombohus Bas project.

The average cost of the total production for the Kombohus Bas project is 23 000 SEK/m^2 useful floor space inc. VAT. This is the total cost including the cost of land. When looking at the distribution among the companies, the majority can be found in the span between 21 500 and 23 500 SEK/m^2 useful floor space (Fig. 27).

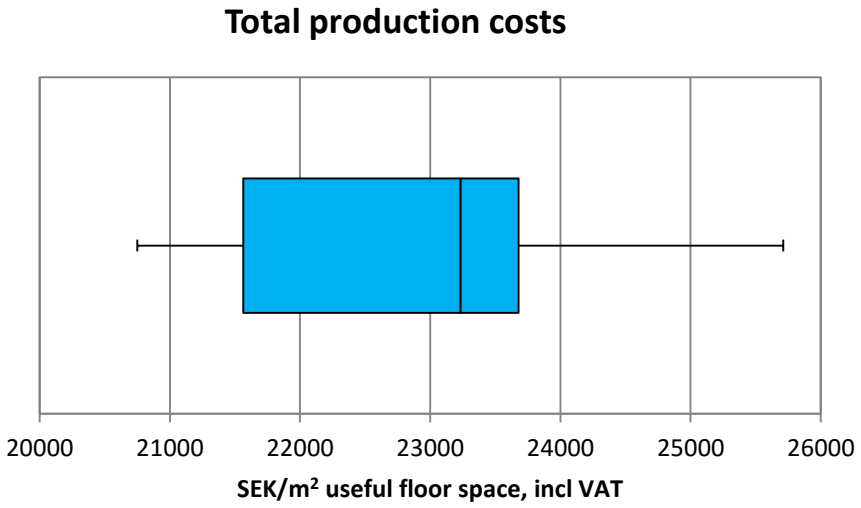


Figure 27. Distribution of total production costs

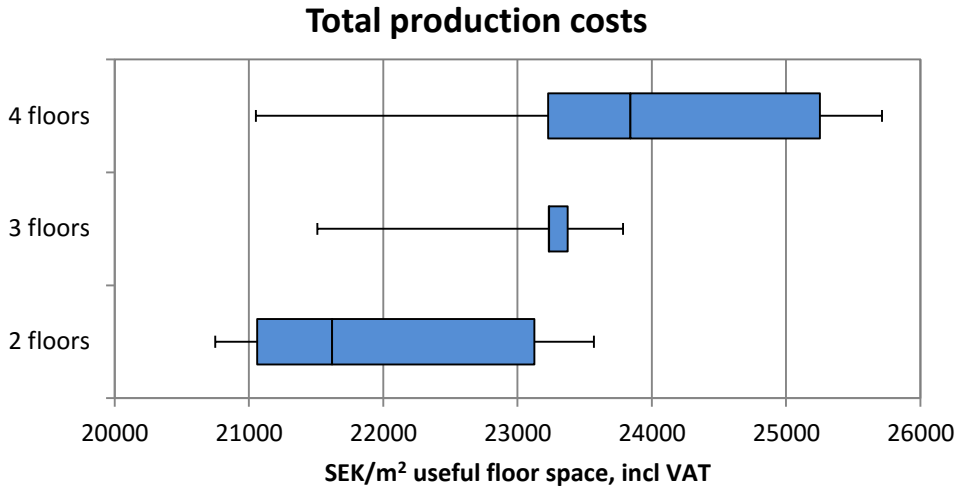


Figure 28. Distribution of total production costs

The illustrations for the costs of groundwork, connection fees, developer's costs and building costs can be found in Appendix 1.

"As long as you have this huge demand in the larger cities, and the condominiums are selling like gold, then there are no incentives to build cheaper and find other methods. Unfortunately the building business is one of the most traditional and undeveloped businesses. New screwdrivers have reached the market but the building techniques are not that much different today from 15 years ago"- Respondent 2

In the questionnaire, the companies were asked about the economic outcome of the Kombohus project, question 18 appendix 4.

Among the companies who had completed the projects 13 % ended up with a lower cost than forecasted (Fig. 29). In 54 % of the companies the result and forecast were the same and in 33 % the result turned out to be more expensive than the forecast.

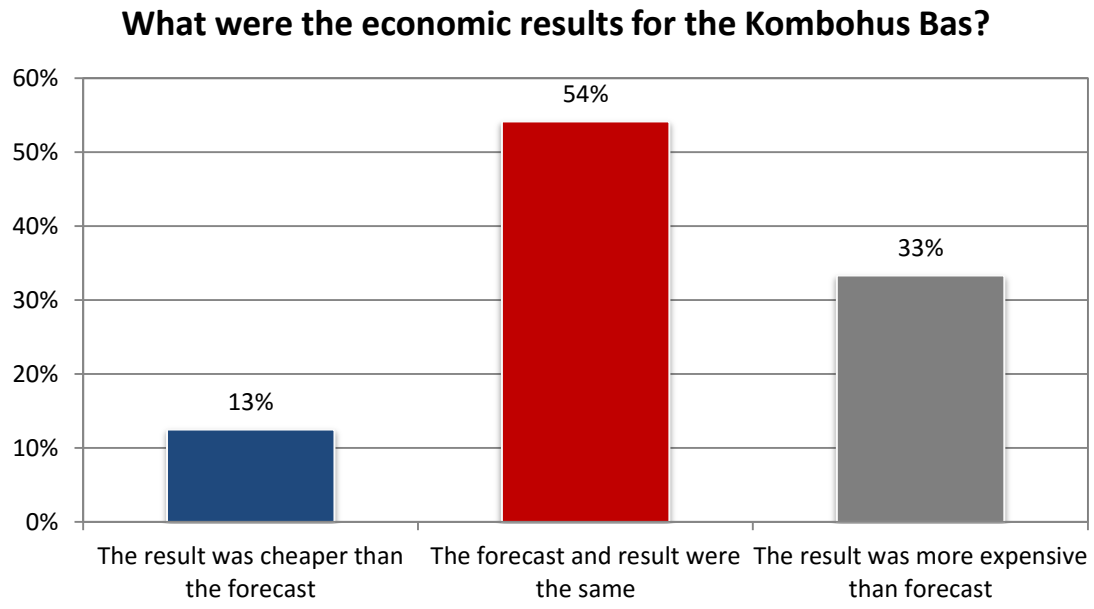


Figure 29. Economic outcome of the Kombohus project.

"Ground work and foundation work got more expensive than predicted"- Respondent 3

"We got higher costs than predicted due to foundation work and the contractors' power consumption during the construction time"- Respondent 7

" It got slightly more expensive than the original forecast but we were still on the plus side from day one which was the requirement"-Respondent 8

6.5 Financial aspects of Kombohus Bas

The companies in the interview were asked if they build projects that will lead to impairments, question 23 appendix 3.

Five of the six companies say that they would not build if it led to impairments. Doing that would require a very firm directive from their owners. According to one of the companies, they are forced to build with impairments and an impairment of 10 % of the total value was accepted in their previous projects. To cope with the impairments they need to have money saved or get money from the owner, the municipality. All companies which have not built in many years say the risk of impairment is one of the reasons why they have not been able to build.

The companies were also asked how the required rate of return is decided, question 23 appendix 3.

One of the companies says that they have chosen to work with the same required rate of return as the market sets in each area. This generates a higher require rate of return in the outskirts of the city and they only build if they can recoup the project. A consequence of this is that they can build better for a higher cost in the city and still have the same rent levels as in the suburbs. Another company says that a market did not exist in their municipality and therefore they had to decide the required rate of return on their own based on risks involved in the project, which was hard. One of the companies had sold off parts of their stock in the million homes programme areas, which affected the market in a positive way and lowered the required rate of the return in the area. Because of the lowered rate of return, it became easier for them to produced new housing in that area.

The interviewed companies were asked how they financed new production of housing, question 24 appendix 3.

None of the companies have problems with financing their projects for new housing. One of the companies finances their new construction by selling off some of their stock and by borrowing from Kommuninvest[1]. The municipality acts guarantors for mortgages in four of the companies and they then borrow from Kommuninvest which has very favourable terms. None of the companies believe that financing is a problem for the housing companies in Sweden. Introducing government credit guarantees is not believed to increase the building pace since it is already easy to borrow money and finance new projects.

1. Kommuninvest offers financing for the local government sector in Sweden.

One company also points out that the interest rates at the moment are not affecting the levels of new construction. They base their calculations on assumptions that the interest rates will increase in the future. However, one other company says that the low interest rates have helped them to make the projects profitable.

6.6 Development and contract aspects of Kombohus Bas

The interviewed companies were asked about their thoughts on industrialized housing construction, question 17 appendix 3.

All the companies believe that industrializing the process for building housing is a good way to go as it lowers the prices and increases the construction rate. The housing industry needs to become more efficient and one way to do this is industrializing the process of building. By using industrialized methods one company believes that we can develop the methods that are being used for building housing. New techniques can be developed to push down the price levels as well and choices of material can evolve and improve the standards of housing.

One company says that they would be able to procure the same kind of building as Kombohus Bas with the same industrialized process but it's the repeatability of the project that cuts the costs and time. Another company says they don't see any disadvantages with industrializing the housing sector as it generates more competitive price levels which in turn lead to them offering better products to their tenants.

”The difference is the effect of repeating; you have the drawings ready so you do not need to do them all over again for each unique project. You also minimize the risk of building errors when you build these properties, because you have a tested product and the design of all the details. If there is an error in production this can be fixed so that the next one will be correct. Otherwise we always build prototypes in this industry and the costs associated with building errors are vast. Often the errors are created because of special solutions and most of them come from the drawing board.”– Respondent 4

The companies were asked about their thoughts on Kombohus Bas and the Million Homes Programme, question 16 appendix 3.

All the companies say that there is no risk that the Kombohus Bas will be a new Million Homes Programme. It is perceived to be a bad argument against Kombohus Bas. One company says that since they are not building higher than four floors and the amount is not very dominating there is no need to be worried. Another company states that the need for a million new homes is not far away:

> *"It is a new million homes programme that we need, you can't shut your eyes to reality" – Respondent 6*

Yet another company says that we will not be able to build a new million homes programme because we don't have the capacity to do so. It is up to the developers to use the Kombohus Bas in the right way and even if we built a lot of Kombohus Bas we will not get new million homes programme areas. Today we want to mix the form of tenure in the areas including both rental apartments and condominiums, thereby resulting in a mixture of people. One company says that the problem with the million programme areas has been the density of the housing and that kind of planning will not happen again.

The interviewed companies were asked about access to developable land and if they have any special requirements from the municipality that could limit construction, question 26 appendix 3.

All the companies except one think there is a lack of developable land in their municipality. One of the companies has no problems getting land. Four of the companies have bought land reserves for future developments. Two of the companies say that the process for creating the local development plan takes one year. None of the interviewed companies experience any special requirements from the municipality which would limit their ability to build new housing. One of the companies has experience from other municipalities which have issues with special requirements, in particular in the standards for energy levels in new housing. The respondent states that high standards within the construction industry can be a good thing but that they have to be national and not vary across the country as that will limit the possibility of using standardized products.

The interviewed companies were asked about the competition and tenders in their municipality and the possibility for foreign contractors to become established, question 60 appendix 3.

Among the companies who have experience of building new housing the number of tenders they receive varies between three and five. Two of these companies express concern about a future lack of construction workers. One of the companies says that in the larger projects it is the national companies and a few medium-sized local companies which participate. Among the companies without much experience of building, one tried to invite tenders for another project after the construction of Kombohus Bas but failed to receive any bids. They believe the market is overheated at the moment which makes it hard to find building companies. When there is no interest in tendering, the company can go directly to a contractor and try to reach an agreement, which is often at a much higher price. Another company says that they have no local contractors that are able to build multi-family housing.

Three companies believe that larger project volumes could attract foreign contractors.
They encourage the presence of foreign contractors on the market but believe it is a hard market to become established on. Today there are some foreign subcontractors but not many bring in a foreign contractor. One company says that larger projects such as Kombohus Bas may attract foreign contractors but it may also limit the possibility for smaller companies to participate in the tendering because of the risks involved.

The interviewed companies were asked about their thoughts on using framework procurements such as Kombohus Bas, question 14 appendix 3.

All the companies are positive to the framework procurement Kombohus Bas and the idea of building housing by using these kinds of framework procurements. The negative aspect of being limited in your options and flexibility is outweighed by the price cuts and the time savings that are achieved by not allowing flexibility and options. One company points out the costs benefits of separating the procurement costs and design phase costs as well as the economies of scale you receive when using a framework procurement. One company says that the best part is the repeatability. If you have a good product it should be replicated instead of “re-inventing the wheel” each time a building is designed. Another company mentions the possibility of going to see the building and also sharing knowledge with companies that have already constructed such a building.

”A lot of positive aspects of the framework procurement and the building, it requires less resources and allows us to build more with approximately the same resources” – Respondent 7

“Good concept where we know the costs and can set the rent levels before production. It saves time by not having to develop a basis for the procurement and it also accelerates the building permit process. The possibility to show the apartments and the building to the tenants before it’s completed. Easier for the tenants to decide when they see how it looks in reality. It facilities our possibility to get it leased and decreases the risk for vacancies” – Respondent 2

6.7 Increased construction in the future

The companies were asked which factors would enable them to build more dwellings in the near future, question 16 appendix 4.

The interview and survey are consistent in the results regarding which factors would enable new construction in the future.

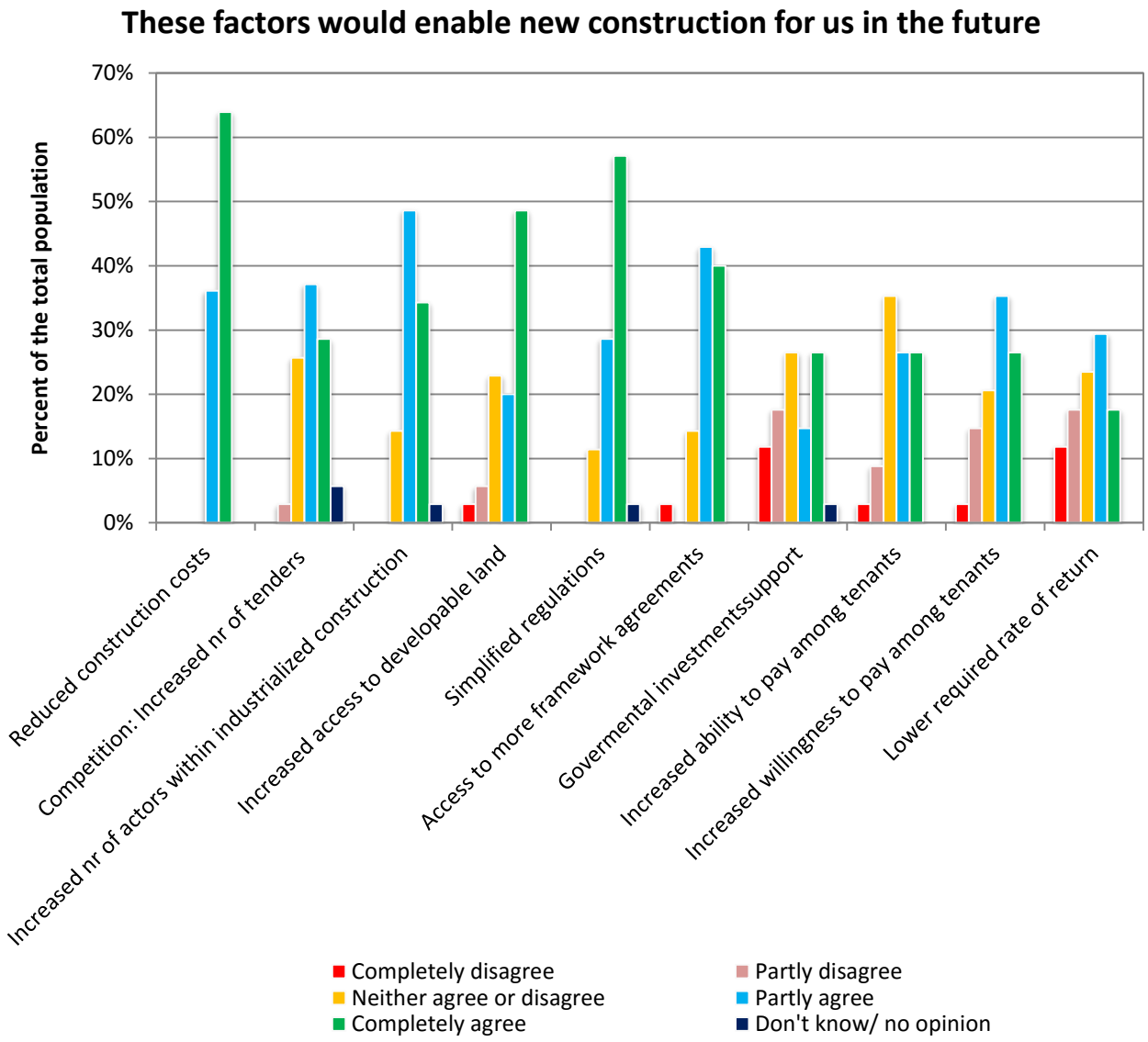


Figure 30. These factors would enable new construction for the companies in the future.

According to the results from the survey, the companies believe that the most important factor for future construction is reduced construction costs (Fig. 30). Other important factors are an increased number of players within the industrialized housing construction sector, simplified regulations and access to more framework procurements.

All of the companies in the interviews mention the construction costs and the fact that the levels need to be kept low for them to be able to build in the future. Access to buildable land and more resources are also said to be major factors among five of the six companies. One company says the main factor is an increase in demand from people with willingness to pay the rent levels.

"The planning process must be redone completely. It takes way too long and it is too easy for individuals to appeal" – Respondent 6

"*New production inevitably leads to impairments. It is very hard to make it break even. Why do they weigh down the housing sector with full tax? This is where the state should introduce reliefs in some regions or on weak markets." – Respondent 9*

In the survey the companies were asked if they would produce housing within the Kombohus concept in the future, question 12 appendix 4.

94 % of all respondents in the survey believe they will produce Kombohus again within the next five years (Fig. 31). Of all the respondents there is only one company that is dissatisfied and is not planning to produce this kind of building again. The reason is that the project did not prove to be as cheap as expected and the contact with the entrepreneur was poor. The respondents were also asked how many Kombohus they are planning to build in the immediate future. A handful of the companies were not sure of the amount they were planning to build but in total they estimated that a total of 1400 apartments were in the planning stage.

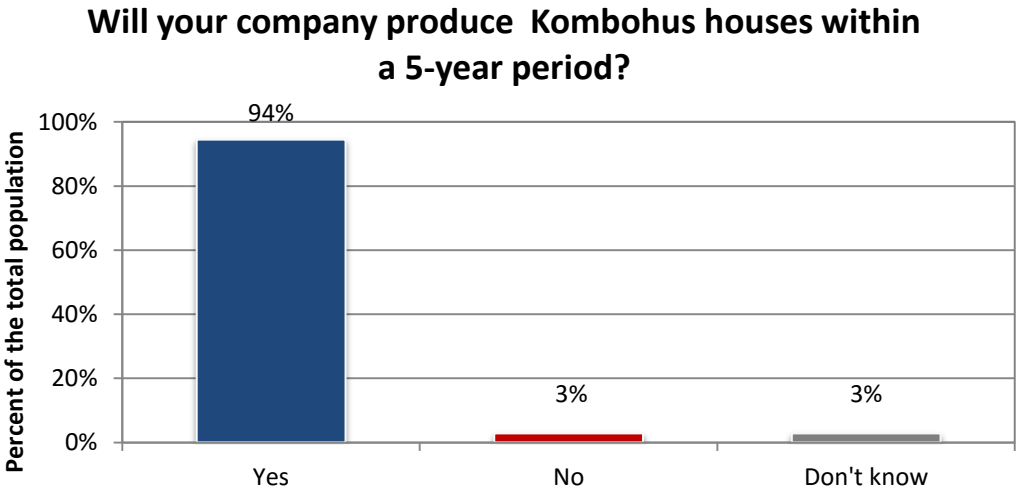


Figure 31. Will you produce housing within the Kombohus in the next 5 years?

7. Analysis

In this chapter the research findings will be analyzed in relation to theory to answer the research question of this thesis; Can framework procurements for turnkey ready multi-family housing increase the supply on the Swedish housing market?

The following three sub-questions have also been addressed:

- ***Has the framework procurement Kombohus Bas increased the housing supply on the market?***
- ***What enables lower production costs?***
- ***What are the obstacles for future housing construction in Sweden?***

7.1 Has Kombohus Bas increased the housing supply on the market?

The level of the construction costs of dwellings in Sweden has been criticized as it is higher than many of the European countries and is seen to be an obstacle in the development of new dwellings. The Four Quadrant Model illustrates that the supply should increase when there is an increase in the demand or if the construction costs are decreased. Decreased building costs should affect the total production cost of a new property, causing the curve in the southwest quadrant to shift to the right and all else being equal, the level of new supply should increase (Fig. 32).

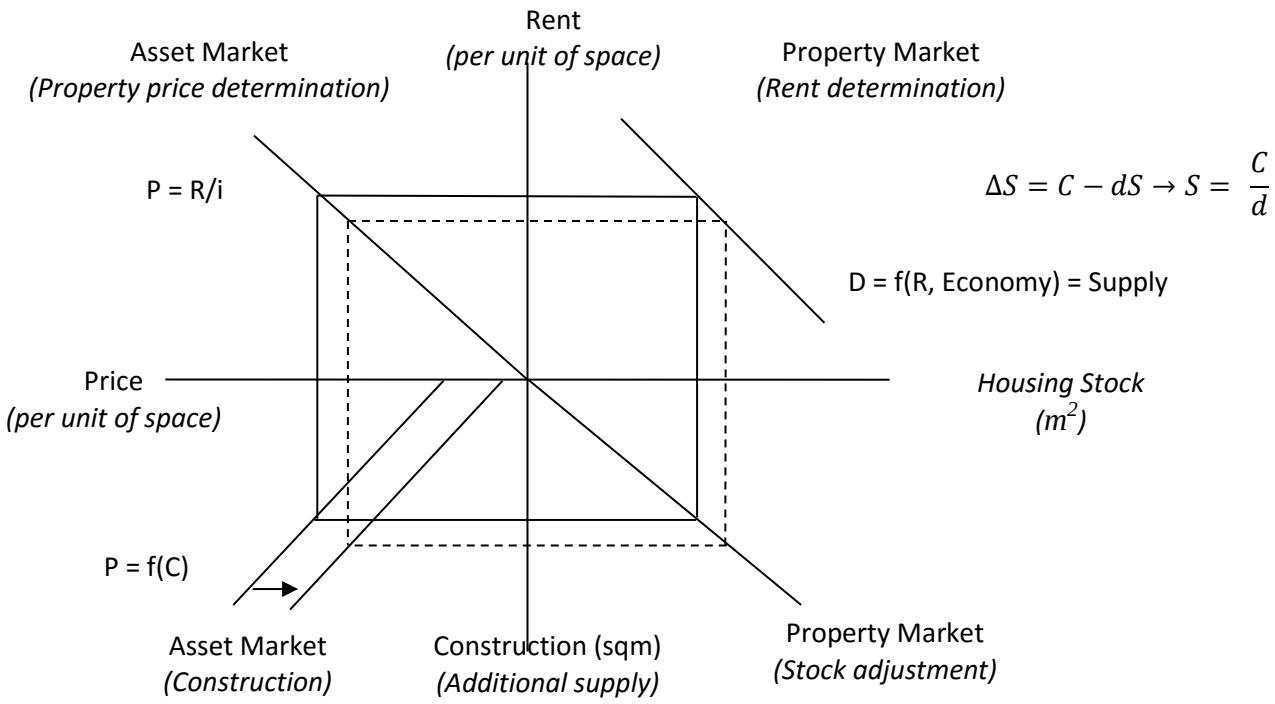


Figure 32. Four Quadrant Model and the effects of decreased construction costs. Source: DiPasquale & Wheaton (1992)

In this research, Kombohus Bas has been used as a case and in relation to the theory, which states that the supply would increase if the construction costs are decreased, it is interesting to analyze whether Kombohus Bas has increased the supply and whether this is due to lower construction costs.

To date, 2 700 Kombohus Bas apartments have been built or are in the process of being built. This research shows that the history of construction among the public housing companies that have procured Kombohus Bas varies. Almost half of them have built housing within the last three years, and about 20 % have not built new housing for over 20 years. The remaining 30 % varies between 3 - 20 years, indicating that this kind of turnkey-ready concept appeals to companies in different kinds of housing situations. This result is in line with the results from the study conducted by Wikman and Andersson at Stockholm University (2015).

The result also shows that the reason for the lack of new construction prior to Kombohus Bas among public housing companies that have not built for more than 20 years is low demand and high construction costs. Among the group of companies that have not built for 6-20 years, construction cost is the main reason together with risk for impairment. This group does not see low demand as an explanation for not building. A majority of the companies disagree with the statement that the reasons would be financial issues, high land prices and a required rate of return which is too high.

Both small and large public housing companies have participated in this study and all of the companies say that there is a housing shortage in their municipality. The way they have used the Kombohus Bas framework procurement to alleviate the housing shortage situation in their municipality is, however, different. Among the companies who have a recent history of constructing new housing, Kombohus Bas has been placed in the outskirts of the cities, while the companies who have not built housing in a long time have placed Kombohus Bas in central locations. This result indicates that framework procurement meets different needs and has functioned both as a complement to existing stock and has been the only new production for some public housing companies.

The main reasons for choosing Kombohus Bas are shown to be that the time from idea to finished product was shortened, that it had an uncomplicated ordering procedure and that the construction costs were low. However, the results show that there is a difference among the companies depending on whether they have built new housing recently or not. The companies who have no experience of building housing chose to build Kombohus Bas mainly because it offers an uncomplicated ordering process, but also because it provides a good complement to existing stock and construction costs are low. The main reason given by the experienced companies, on the other hand, was the shortened time span, but they also considered it as a good complement to existing stock and one that offered low construction costs

Forty-two percent of the companies state that they would not have been able to build new housing without Kombohus Bas and a majority of these companies have not built new dwellings in many years. The total number of homes these forty-two percent have built is 526 dwellings, which would not have reached the market if Kombohus Bas had not existed. Among the companies which have built the during the last three years it is interesting to see that almost 20 % state that they would not have been able to build without Kombohus Bas. This shows that Kombohus Bas has enabled construction not only among the companies with little experience of construction but also among the companies who have a lot of experience of building new houses.

Among the companies who would have been able to build without Kombohus Bas, it is interesting to see that a majority say that even though they would have been able to build, Kombohus Bas has enabled them to build more and in areas which otherwise would not have been possible. The number of dwellings that would not have reached the market is, therefore, most likely higher than 526. This result shows that Kombohus Bas has increased the supply of dwellings on the market. Since Kombohus Bas is the case used in this research and the results indicate that Kombohus Bas is a successful project, we believe that using these kinds of framework procurements will increase the supply on the Swedish housing market.

7.2 What enables lower production costs?

The concept of Kombohus Bas is a large procurement of industrially constructed housing which can be procured all over Sweden. The fact that the houses are designed in an industrialized way has enabled repeatability which has increased the efficiency and minimized technical building faults. The size of the procurement is possible due to the framework procurement which in turn has enabled economies of scale and lower construction costs. The fear of the parallel between the Million Homes Programme and Kombohus Bas is not a concern for any of the companies who have procured the Kombohus Bas. All of the companies in this study are positive towards a further development of the industrialized aspect of the housing construction sector. The use of a framework procurement is also seen as a main factor for choosing to build housing. Instead of "re-inventing the wheel" each time a residential building is built this use of a framework procurement is seen to be part of the success as it requires less resources from the developer and saves a lot of time.

In this study the production costs in the case of Kombohus Bas have been analyzed and the results show that the average total production cost was 23 000 SEK /m^2 useful floor space, incl VAT. The latest corresponding figures from the Statistics of Sweden were for 2014, which showed that the total production cost for rental apartments was 29 000 SEK/m^2 useful floor space including VAT. The result from this study show that the cost for Kombohus Bas has been 25 % cheaper than the production costs for rental apartments in Sweden. The figures for the production costs are in line with the ones presented in the thesis written by Hallman & Häll where eight of the ten companies in their study had a total production cost between 20 000 – 23 000 SEK/ useful floor space including VAT. The economic outcome for Kombohus Bas was in many of the cases the same as forecasted. The fact that the costs are locked at an early stage of the development process is also one of the strengths that are highlighted by the companies. Where the result has become more expensive than forecasted, this is because of higher costs associated with ground and foundation works.

By using framework procurements such as Kombohus Bas, this study shows that it is possible to lower production costs by using industrialized methods combined with economies of scale. However, it is interesting to discuss whether the decreased production cost is the only explanation for the increased supply as the theory states.

This study shows that there are several factors combined with each other that lie behind the increased supply. A majority of the companies believe that the lowered production costs are the most important factor, but almost 40 % of the companies that have been able to build recently state that the simplicity of the framework is a main factor for choosing Kombohus Bas. Almost 10 % of all the public housing companies say it is the timesavings that are most important. Because of this result, we believe that only lowering production costs will not increase the housing supply; however, it is a crucial part of the problem. By using framework procurements, lower production cost, simplicity and timesavings can be achieved, which we believe are the main necessary factors for increasing the supply.

7.3 What are the obstacles for future housing construction in Sweden?

The reasons for the low construction levels in Sweden are frequently discussed and there is no single agreed solution to the housing shortage. In this study some of the obstacles that are usually mentioned have been analyzed.

Looking at the financial situation, none of the housing companies in this study have problems with financing their projects for new housing, and introducing government credit guarantees is not believed to increase the building pace since it is already easy to borrow money. However, the risk for impairments is seen as an issue among the companies who have not built new housing in a long time. This is in line with what is concluded in SOU 2015:105 where the authors state that there are no indications that financial restrictions are a problem for housing development. However, it is stated that there have been problems with financial restrictions in times of recession which could explain why the public housing companies do not experience problems with financing since credit is currently easy to obtain. The risk for impairment however, will not disappear with good credit accessibility. In order to minimize this risk, for impairments the costs of building new dwellings need to be reduced in order to achieve profitability and sustain an economic balance in the companies.

The lack of developable land is seen to be a problem in the majority of the municipalities and an increase in access to developable land is believed to have a large impact on their ability to build in the future. This is mentioned in the government investigation SOU 2015:105 which states that access to developable land is important for housing development. Furthermore, special requirements from the municipalities have been mentioned in SOU 2015:105 as one obstacle in the housing sector and a threat to acceptable building costs and competition on the market. However, none of the interviewed companies in this study experience any special requirements from the municipality that would limit their ability to build new dwellings.

The report from the Swedish Competition Authority in 2015 stated the need for increased competition within the building sector (Konkurrensverket 2015:4). The results from this study emphasize the lack of competition and the need for an increase in the number of players on the market. There is especially a need for an increase in companies within the industrialized housing production. The companies also believe that larger project volumes could attract foreign contractors which in turn could increase competition on the market.

The results also show that the target group for Kombohus Bas in most of the municipalities has been elderly people but the actual mixture of tenants have been broad, including young people, young couples and families with children. This is not in line with the results from the study conducted by Stockholm University.

In the discussions on difficulties in achieving profitability in new construction, one aspect is the cost of building and the other is tenants' income and willingness to pay. Developers are forced to set a certain rent level depending on the quality of the house compared to other existing comparable properties. The Kombohus Bas houses that have been built have an average rent level of 1 444 SEK/m^2/year. This is a large difference compared to existing stock in all of the municipalities in this study. However, compared to other newly developed rental apartments, the levels in Kombohus Bas are lower. The interviews in this study show that the rent levels are between 1700-1900 SEK/m^2/year for other new construction built by the public housing companies. This shows that the rent levels in Kombohus Bas have been between 250 and 450 SEK cheaper per m^2 and year.

Framework procurement is believed to increase the supply on the market but other factors on the market can affect the success of such framework procurements. The risk for impairments, lack of developable land and the lack of competition are factors that the results from this study indicate will be obstacles in the future and that need to be addressed in order to increase the supply on the housing market.

8. Conclusions

Can framework procurements for turnkey ready multi-family houses increase the supply on the Swedish housing market?

Sweden is experiencing a major housing shortage and the public housing companies play an important role on the market with their 46 percent share of the rental segment. The results from this research show that the framework procurement Kombohus Bas has increased the supply on the housing market in Sweden, most importantly because it has lowered the production costs, and also simplified and shortened the building process timeline. Of the Kombohus Bas houses that have been built, 526 dwellings were built by companies that would not have been able to build if the concept had not existed. This means that Kombohus Bas has enabled 526 dwellings to reach the market and increase the supply.

Of the companies that would have been able to build without the Kombohus Bas framework procurement, the majority say that the framework agreement has enabled them to build more and in areas which otherwise would not have been possible and attribute this to a reduction of construction costs. Since decreased construction costs should, according to theory, increase the supply of dwellings on the market, Kombohus Bas should make it more profitable to build new houses. Industrializing the housing construction process and enabling repeatability results in a more efficient building process and lower production costs.

The information gained shows that it is possible to lower costs in the construction industry. However, the lower construction costs are not the only key factor that affects the supply on the market. Simplicity in the building process and timesaving methods are of equal importance. Other obstacles that need to be addressed in order to increase the future housing production in Sweden are: the risk of impairment, the lack of developable land and lack of competition. All these key points are connected with the problems of achieving profitability for the public housing companies when building new rental apartments, which is a crucial factor for increasing new supply in Sweden.

Finally, conclusions that can be drawn from this study are that using framework procurements for turnkey ready multi-family houses can increase the supply on the Swedish housing market. This study indicates that by using these types of framework procurements all of the participants in the process, from developers to tenants, will be positively affected. Instead of treating the construction of houses as unique projects, economies of scale will be accomplished when the size of procurements increases and repeatability is used in the process. Rather than inventing the wheel all over again every time a house is built, framework procurements will not only shorten and simplify the building process but also decrease the cost of construction. The Kombohus Bas concept has proven to be a good example of how we can solve the problem of low housing supply in Sweden, and by developing this idea further, new improved framework procurements can be developed in favour of the housing market.

In this thesis, we have chosen to focus on the supply side factors of the housing market. Further research could focus on the demand side factors and how they affect these kinds of framework procurements. It would also be interesting to broaden the research by looking closer at the framework procurements that have been developed as a result of Kombohus Bas. Have the other Kombohus concepts, Kombohus Mini and Kombohus Plus, had the same effect on the housing market as Kombohus Bas? It could also be of interest to investigate the life cycle costs for Kombohus Bas. These kinds of framework procurements could be applicable on other segments of the market such as student apartments and homes for the elderly and further research areas could focus on the possibility of applying framework procurements on those market segments. Another interesting research angle could be to look closer at the competition on the market and the obstacles that foreign contractors perceive on the Swedish market.

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10. Appendices

Appendix 1. Costs

Average ground work costs were 2142 SEK/m^2 of useful floor space incl VAT. The groundworks can include foundation slab and other groundwork costs.

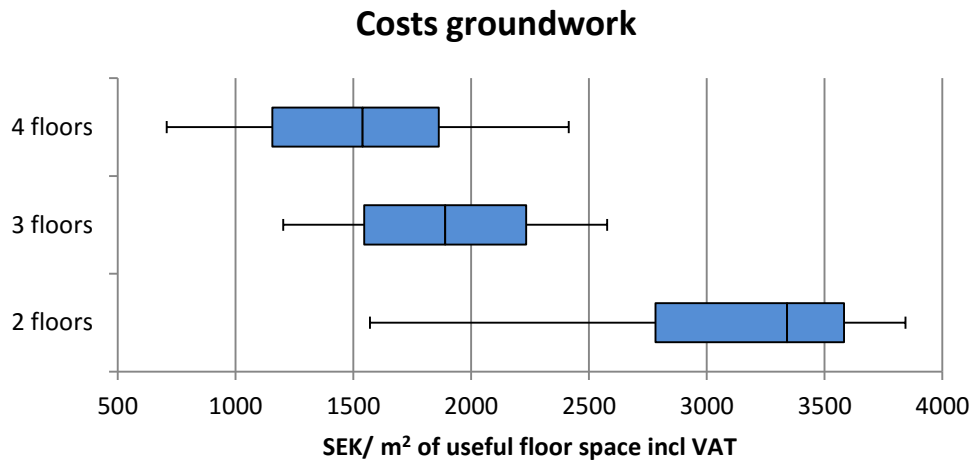

Figure 33. Distribution of costs for groundwork.

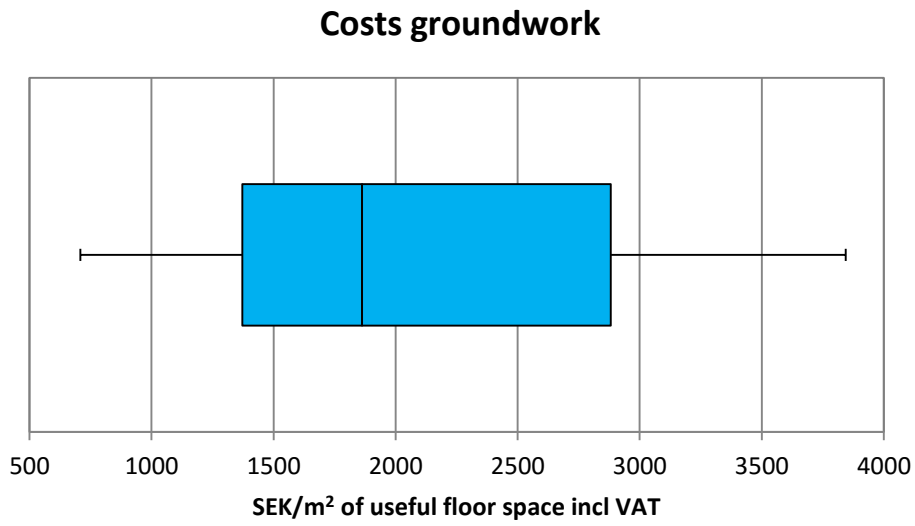

Figure 34. Distribution of costs for groundwork.

The connection fees include fees from the municipality, heating and gas, electricity and Internet connections.

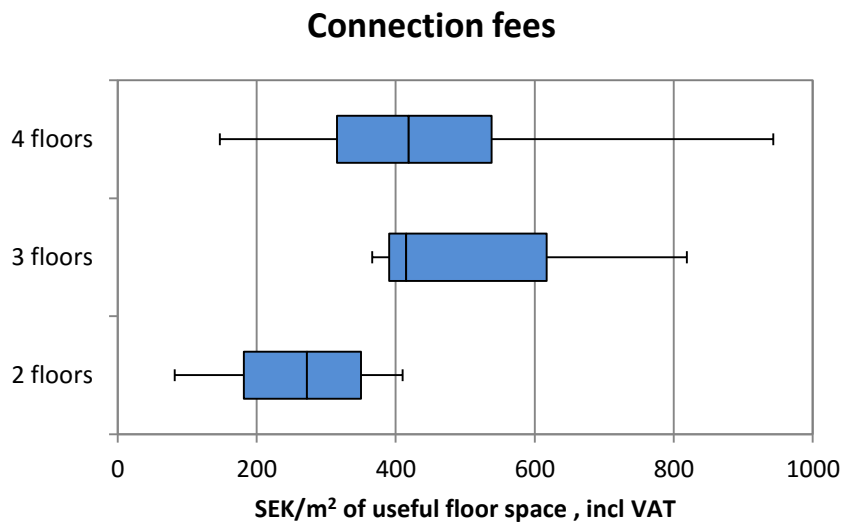

Figure 35. Distribution of costs for connection fees.

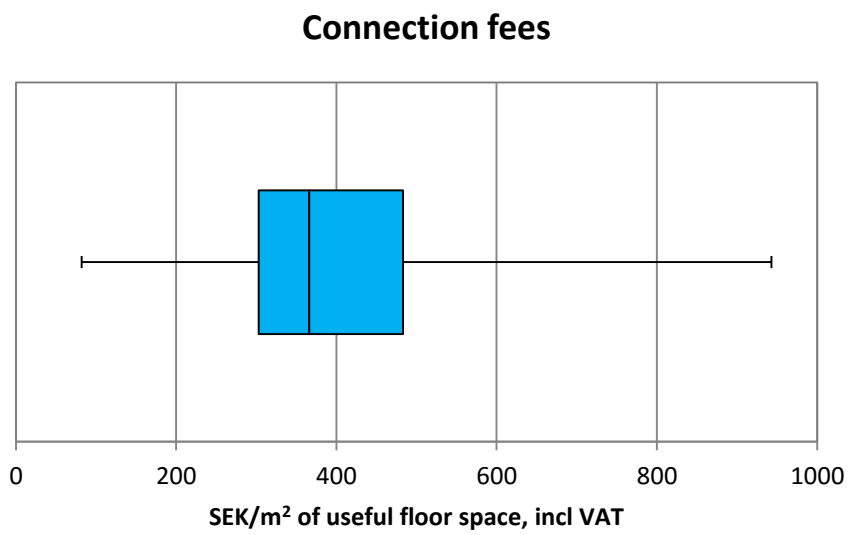

Figure 36. Distribution of costs for connection fees.

The developer's costs include all construction management costs, fees for applying for building permits, an administrative fee for SABO etc.

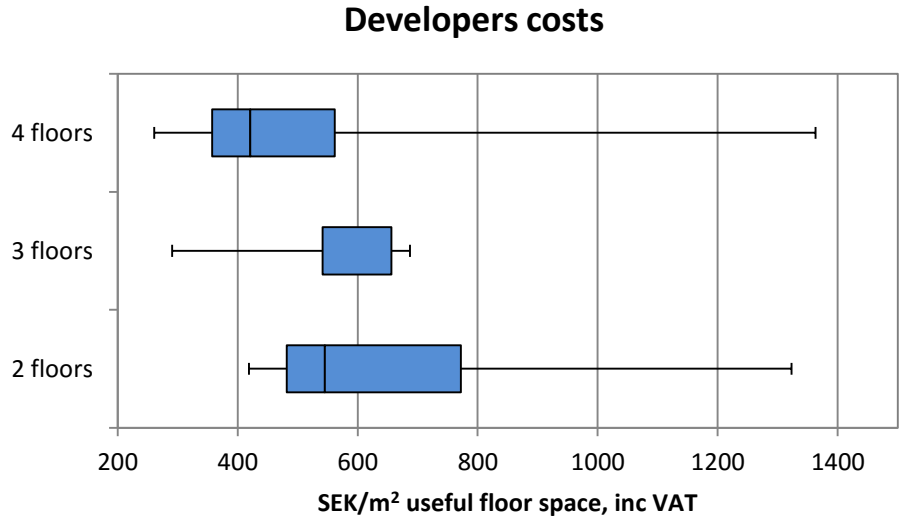

Figure 37. Distribution of developers costs.

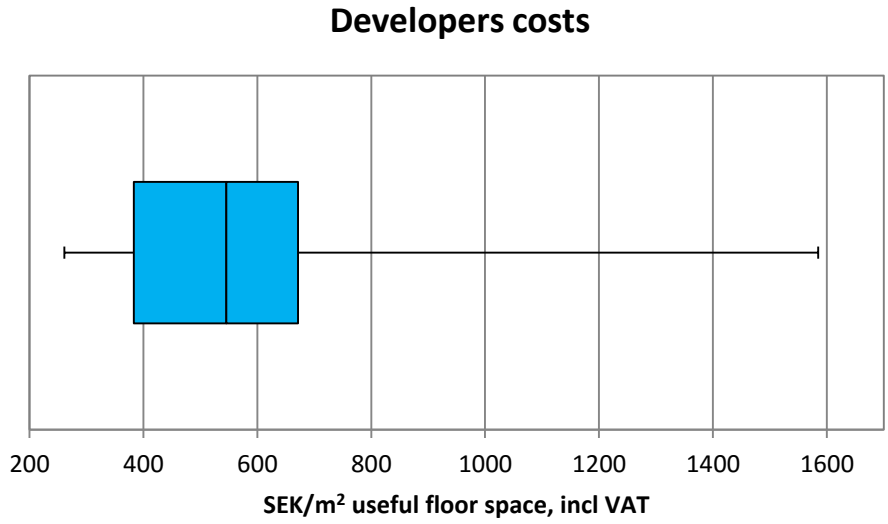

Figure 38. Distribution of developer's costs.

The building costs include all costs except costs associated with the land. They include the normal foundation work with the foundation slab but not costs associated with extraordinary ground works or preparatory work such as decontamination of the land or demolition of previous buildings. On an aggregate level 50 % of the companies have a building cost within the span of 20 000 – 21 500 SEK/m^2 useful floor space (Fig. 40).

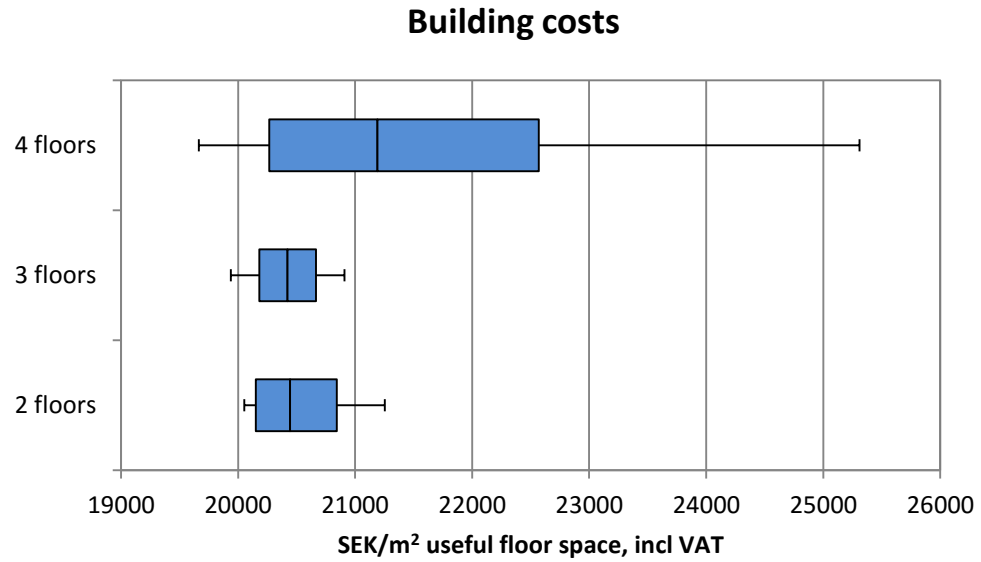

Figure 39. Distribution of the building costs.

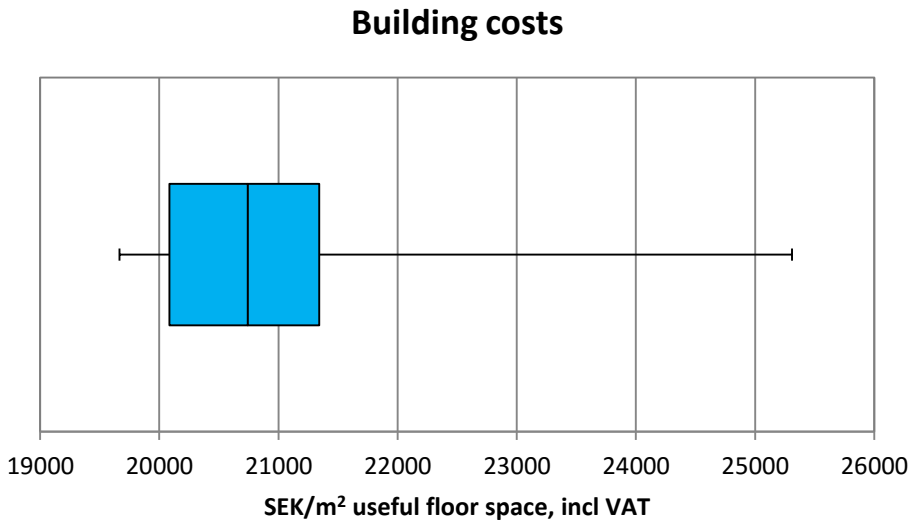

Figure 40. Distribution of the building costs.

Appendix 2. Presentation of the interviewed companies

The presentation of the companies is based on information given by the CEO at the interviews and some added information from the companies' websites.

Tierpsbyggen

Tierpsbyggen is located in Tierp, a small village located between Uppsala and Gävle, north of Stockholm. The company was founded in 1974 and was partly owned by Riksbyggen up until 1994. In 1994 the company became a publicly owned company, fully owned by the municipality. Tierpsbyggen is a major actor in the municipality, owning and managing about 1 800 apartments and around 100 premises spread over 12 different locations. Their existing stock consists of apartments, villas and town houses.

Gavlegårdarna

Gavlegårdarna is one of the larger publicly owned housing companies with about 180 employees and a turnover of about 1 billion SEK. It is located in Gävle which is a larger city north of Stockholm with about 70 000 inhabitants. Gavlegårdarna owns about 15 000 apartments and 1000 premises. They are constructing new rental apartments as well as managing their existing stock.

Witala Bostäder

Witala Bostäder was founded in 1963 and owns and manages an existing stock of 971 residential buildings and some premises where about 80 % of the rental apartments are located in the urban area. Witala bostäder is located in Vetlanda in Småland, a small town with about 26 800 inhabitants in the south of Sweden. Around 2005, Witala Bostäder started to reduce their existing stock due to a decreasing population and a lack of demand. The Kombohus project is the first construction project for Witala Bostäder in a very long time.

Älmhultsbostäder

Älmhultsbostäder is located in Älmhult in Småland. The company has a stock of 42 properties with 1 347 apartments which they manage on their own. Älmhult is a small town, but highly characterized by the main employer, IKEA. Älmhult is suffering from a housing shortage and the company has 1 100 people in their housing queue looking for an apartment at the moment.

Flens Bostads AB

Flens Bostads AB is a small public housing company with 23 employees. The company is located in Flen, a small town about 117 km south of Stockholm. Flen Bostads AB was founded in 1941. They are the largest actor on the housing market in Flen, and they own about 1750 apartments. About 1500 of them are located in the centre of Flen. Flen Bostads AB haven't built any rental apartments since 1987, which was the last time they responded to demand from the market. Since then they've only built a few cooperative rental apartments, which they did in 2007.

Stångåstaden

Stångåstaden is the public housing company in the residential city Linköping which is located 200 km south of Stockholm. It was founded in 1942 and was at first called Råbergahus. Their goal was to develop new apartments in order to prevent a major housing shortage developing after the war. In 1948 they changed their name to Stångåstaden. The company is a large actor in Sweden with about 28 per cent of the total rental apartment stock in Linköping. They own about 19 000 rental apartments, and 4 200 of them are student apartments. Linköping has a serious problem with housing shortage, and Stångåstaden are developing several rental apartment projects in Linköping to meet that growing demand.

Appendix 3. Interview guide

The interview guide is divided into two sections. One was used for companies that have not built for more than 20 years prior to Kombohus Bas and the second was used for companies that have constructed recently.

Swedish version:

Intervjufrågor (Bolag som ej har byggt på mer än 20år)

Bakgrund

1. Berätta lite om XXX. Hur ser er historia ut?
2. Hur ser behovet av bostäder ut i XXX. Riktar ni er till någon specifik målgrupp?
3. Historiskt sett, hur mycket har ert företag fokuserat på nyproduktion?
4. Enligt enkäten så var det mer än 20 år sedan ni byggde senast. Varför var det så länge sedan ni byggde?
5. Hur många bostäder behöver byggas i er kommun inom de närmsta 10 åren för att matcha utbud och efterfrågan?

Kombohusprojektet

6. Hur långt har ni kommit i bygget av Kombohus?
7. När ni beslutade er för att bygga Kombohus Bas, vad avgjorde att valet föll på Kombohus?
8. Hade ni andra alternativ att välja mellan?
9. Är Kombohus uteslutande den faktorn som gör att ni nu bygger efter så många år?
10. I vilken typ av läge har ni valt att uppföra Kombohus?
11. Hur mycket har priset på Kombohuset påverkat att ni valde att bygga just Kombohus?
12. Hur mycket kommer ni att bygga den närmaste femårsperioden? Vad?

Ramavtalet

13. Vilka för- och nackdelar finns det med ramavtalet för Kombohus Bas?
14. Hur skulle ni vilja förbättra ramavtalet om ni hade möjlighet?
15. Kombohus är ju skapats av SABO, och SKL är nu också i startgroparna i att ta fram en liknande nationell satsning med standardiserade produkter. Vad tror du om möjligheten för kommunerna att samarbeta för att skapa en gemensam upphandling av ramavtal av standardiserade produkter?

Industriellt byggande

16. Det finns åsikter kring likheten mellan Kombohusen och Miljonprogrammen och dess liknande utformning och kvalité. Vilken är din åsikt?
17. Vilka för-och nackdelar ser ni med industriellt byggande?
18. Hur tror du att det industriella byggandet kommer att se ut om 10år? Vilka direktiv finns?
19. Om du fick bestämma, hur tycker du att det industriella byggandet borde se ut i framtiden?

Hinder i byggprocessen

20. När det byggs nya bostäder, hur ser hyressättningssystemet ut?
21. Utveckla er syn på betalningsförmåga/vilja på orten.
22. Finns det svårigheter i att hyra ut lägenheter på orten?
23. Har risken för nedskrivning påverkat ert byggande innan Kombohus Bas?
24. Hur finansierar ni era projekt?
25. Är finansiering ett problem för er?
26. Finns det kommunala särkrav som ni måste förhålla er till? Vilka?
27. Är dessa ett hinder för er för att kunna bygga nytt?

Framtid

28. Vilka faktorer anser ni behöver ändras för att ni ska kunna bygga fler bostäder?
29. Vad tror du är lösningen på bostadsbristen?

Intervjufrågor (Bolag som har byggt för mindre än 3 år sedan)

Bakgrund

30. Berätta lite om XXX. Hur ser er historia ut?
31. Hur ser behovet av bostäder ut i XXX. Upplever ni att det är bostadsbrist? Riktar ni er till någon specifik målgrupp?
32. Historiskt sett, hur mycket har ert företag fokuserat på nyproduktion?
33. Enligt enkäten så var det mindre än 3 år sedan ni byggde senast. Vad var det för projekt?
34. Hur många bostäder behöver byggas i er kommun inom de närmsta 10 åren för att matcha utbud och efterfrågan?

Kombohusprojektet

35. Hur långt har ni kommit i bygget av Kombohus?
36. När ni beslutade er för att bygga Kombohus Bas, vad avgjorde att valet föll på Kombohus?
37. Hade ni andra alternativ att välja mellan?
38. Vad är skillnaden i process från idé till färdigt hus mellan de projekt ni tidigare uppfört och Kombohus?
39. Har Kombohus möjliggort att ni kunnat bygga fler lägenheter än vad ni annars planerat? Varför?
40. Har Kombohus möjliggjort för er att bygga i nya områden som annars inte hade varit lönsamma (C-läge)?
41. Hur mycket har priset påverkat att ni valde att bygga just Kombohus?
42. Hur många lägenheter planerar ni att bygga den närmaste femårsperioden? Vad?

Ramavtalet

43. Vilka för- och nackdelar finner ni med ramavtalet för Kombohus Bas?
44. Hur skulle ni vilja förbättra ramavtalet om ni hade möjlighet?
45. Kombohus är ju skapat av SABO, och SKL är nu också i startgroparna för att ta fram en liknande nationell satsning med standardiserade produkter. Vad tror du om möjligheten för kommunerna att samarbeta för att skapa en gemensam upphandling av ramavtal av standardiserade produkter?

Industriellt byggande

46. Det finns åsikter kring likheten mellan Kombohus och Miljonprogrammen och dess liknande utformning och kvalite. Vilken är din åsikt?
47. Vilka för- och nackdelar ser ni med industriellt byggande?
48. Hur tror du att det industriella byggandet kommer att se ut om 10 år? Vilka direktiv finns?
49. Om du fick bestämma, hur tycker du att det industriella byggandet borde se ut i framtiden?

Hinder i byggprocessen

50. Vad är er åsikt om kostnaden för att uppföra nya hus?
51. I era tidigare projekt, vad har BOA/kvm landat på?
52. När det byggs nya bostäder, hur ser hyressättningssystemet ut?
53. Utveckla er syn på betalningsförmåga/vilja på orten.
54. Finns det svårigheter att hyra ut lägenheter på orten?
55. Har risken för nedskrivning påverkat ert byggande innan Kombohus Bas?
56. Hur finansierar ni era projekt?
57. Är finansieringen ett problem för er?
58. Finns det kommunala särkrav som ni måste förhålla er till? Vilka?
59. Är dessa kommunala särkrav ett hinder för er för att kunna bygga nytt?

Konkurrens

60. Hur ser anbudsförfarandet ut vid nyproduktion? Är det många aktörer som lämnar anbud? Behövs det fler?
61. Vad tror ni om möjligheten att få in utländska aktörer på marknaden som ger anbud?

Framtid

62. Vilka faktorer anser ni behöver ändras för att ni ska kunna bygga fler bostäder?
63. Vad tror du är lösningen på bostadsbristen?

English version:

Interview questions (Companies that have not built for over 20 years prior to Kombohus)

Background

1. Tell us about XXX. What does your history look like?
2. Do you have a demand for houses in your municipality? Do you have a certain target group?
3. Looking historically, how much have your company focused on new production of houses?
4. According to the survey it's been more than 20 years since you last built. Why has it been so long?
5. How many apartments do you need to build in your municipality in the next 10 years to match the demand?

The Kombohus project

6. How far along are you with the Kombohus project?
7. At the time of choosing Kombohus, why did your choice end up at Kombohus?
8. Did you have other options to choose from?
9. Is Kombohus the main factor in enabling you to construct after so many years?
10. In what kind of location have you placed Kombohus?
11. How much has the price of Kombohus affected you choice to build Kombohus?
12. How much are you planning to build in the next 5 years? What?

The framework procurement

13. Which pros and cons do you see with the framework procurement Kombohus Bas?
14. How would you like to improve the framework procurement?
15. Kombohus is created by SABO, and SKL is currently developing a similar national project with standardized products. What are your thoughts on this and do you believe the municipalities can come together to create similar framework procurements?

Industralized housing construction

16. Some believe that there are many similarities between the Kombohus and the Million Homes Programme., What is your opinion on this?
17. What pros and cons do you see with industrializing the construction of houses?.
18. What do you think the industrialized construction will look like in 10 years?
19. If you could decide, how would the industrialized construction look in the future?

Obstacles in the building process

20. How do you set your rent levels?
21. Explain your view on ability to pay/willingness to pay in your city.
22. Do you have problems with vacancies?
23. Did the risk of impairtments affect your construction levels prior to Kombohus?
24. How do you finance your projects?
25. Is the financing an issue for you?
26. Do you have municipal regulations to consider when building new dwellings?
27. Are these municipal regulations obstacles to new construction?

Future

28. What factors need to change for you to be able to construct new dwellings in the future?
29. What's your view on how to solve the housing situation in Sweden?

Interview guide (Companies that have built during the last 3 years)

Background

30. Tell us about XXX. What does your history look like?
31. Do you have a demand for houses in your municipality? Do you have a certain target group?
32. Looking historically, how much have your company focused on new production of houses?
33. According to the survey it's been less than three years since you last built. What project was that?
34. How many apartments do you need to build in the next 10 years to match the demand?

The Kombohus project

35. How far along are you with the Kombohus project?
36. At the time of choosing Kombohus, why did your choice end up at Kombohus?
37. Did you have other options to choose from?
38. What are the main differences in the process from ide to finished product between your previous projects and Kombohus?
39. Has Kombohus enabled you to build more apartments than planned?
40. Has Kombohus enabled you to build in new areas which otherwise would not be profitable?
41. How much has the price of Kombohus affected you choice to build Kombohus?
42. How much are you planning to build the next 5 years? What?

The framework procurement

43. Which pros and cons do you see with the framework procurement Kombohus Bas?
44. How would you like to improve the framework procurement?
45. Kombohus is created by SABO, and SKL is currently developing a similar national project with standardized products. What are your thoughts on this and do you believe the municipalities can come together to create similar framework procurements?

Industralized housing construction

46. Some believe that there are a lot of similarities between the Kombohus and the Million Homes Programme. What is your opinion on this?
47. What pros and cons do you see with industrializing the construction of houses?
48. How do you the industrialized construction will look in 10 years?
49. If you could decide, how would the industrialized construction look in the future?

Obstacles in the building process

50. What is your opinion on the construction costs?
51. In your previous projects, what has the Cost per useful floor space ended up at?
52. How do you set your rent levels?
53. Explain your view on ability to pay/willingness to pay in your city.
54. Do you have problems with vacancies?
55. Did the risk for impairments affect your construction levels prior to Kombohus?
56. How do you finance your projects?
57. Is the financing an issue for you?
58. Do you have municipal regulations to consider when building new dwellings?
59. Are these municipal regulations an obstacle to new construction?

Competition

60. What does the tendering process look like for new construction? How many contractors submit tenders?
61. What's your view on the possibility of encouraging foreign contractors to enter the market?

Future

62. Which factors need to change for you to be able to construct new dwellings in the future?
63. What's your view on how to solve the housing situation in Sweden?

Appendix 4. Questionnaire

Swedish version:

Konceptet Kombohus Bas och dess påverkan på den svenska bostadsmarknaden

SABO:s ramavtal Kombohus Bas är ett koncept som avropats av flertalet medlemmar i organisationen. Att många projekt har avropats öppnar upp för möjligheten till att utvärdera konceptet och dess påverkan på den svenska bostadsmarknaden. Undersökning och dess utvärdering genomförs av två studenter från KTH i samarbete med SABO. Enkäten tar ca 10 minuter att besvara.

Ditt deltagande är mycket värdefullt för oss! För att möjliggöra en fullständig rikstäckande analys hoppas vi att ni tar er tid att medverka.

1. **Hur många Kombohus Bas har ni avropat fram till dagens datum?**

Ange antal lägenheter

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2. **När byggde ni senast nya bostäder annat än Kombohus Bas?**

- ❑ Mindre än 3 år sedan
- ❑ 3 år - mindre än 6 år sedan
- ❑ 6 år - mindre än 11 år sedan
- ❑ 11 år - mindre än 20 år sedan
- ❑ 20 år eller mer

Kommentar

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3. **Vilken typ av bostadshus har ni främst byggt de senaste fem åren?**

(Flera svarsalternativ är möjliga)

- ❑ Flerbostadshus som är högre än fyra våningar
- ❑ Flerbostadshus som är fyra våningar eller lägre
- ❑ Enfamiljshus
- ❑ Tvåfamiljshus

Annat alternativ

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4. Varför är det mer än sex år sedan ni byggde nya bostäder?

Vi har bedömt att det har varit:

	Tar helt avstånd	Tar delvis avstånd	Varken instämmer eller tar avstånd	Instämmer delvis	Instämmer helt	Vet ej/ ingen åsikt
För låg efterfrågan	❑	❑	❑	❑	❑	❑
För höga byggpriser	❑	❑	❑	❑	❑	❑
Problem med att få finansiering	❑	❑	❑	❑	❑	❑
Upphandlingsprocessen har varit för komplex	❑	❑	❑	❑	❑	❑
Plan-och byggprocessen medför hög risk	❑	❑	❑	❑	❑	❑
För höga markpriser	❑	❑	❑	❑	❑	❑
Brist på byggbar mark	❑	❑	❑	❑	❑	❑
Låg betalningsförmåga på orten	❑	❑	❑	❑	❑	❑
Låg betalningsvilja på orten	❑	❑	❑	❑	❑	❑
Den reglerade hyresnivån på orten är för låg	❑	❑	❑	❑	❑	❑
För höga avkastningskrav	❑	❑	❑	❑	❑	❑
Hög risk för nedskrivning	❑	❑	❑	❑	❑	❑
Annat alternativ						

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5. Varför är det mer än 11 år sedan ni byggde nya bostäder?

Vi har bedömt att det har varit:

	Tar helt avstånd	Tar delvis avstånd	Varken instämmer eller tar avstånd	Instämmer delvis	Instämmer helt	Vet ej/ ingen åsikt
För låg efterfrågan	❑	❑	❑	❑	❑	❑
För höga byggpriser	❑	❑	❑	❑	❑	❑
Problem med att få finansiering	❑	❑	❑	❑	❑	❑
Upphandlingsprocessen har varit för komplex	❑	❑	❑	❑	❑	❑

Plan-och byggprocessen medför hög risk	❑	❑	❑	❑	❑	❑
För höga markpriser	❑	❑	❑	❑	❑	❑
Brist på byggbar mark	❑	❑	❑	❑	❑	❑
Låg betalningsförmåga på orten	❑	❑	❑	❑	❑	❑
Låg betalningsvilja på orten	❑	❑	❑	❑	❑	❑
För höga avkastningskrav	❑	❑	❑	❑	❑	❑
Hög risk för nedskrivning	❑	❑	❑	❑	❑	❑
Annat alternativ						

6. Varför är det mer än 20 år sedan ni byggde nya bostäder?

Vi har bedömt att det har varit:

	Tar helt avstånd	Tar delvis avstånd	Varken instämmer eller tar avstånd	Instämmer delvis	Instämmer helt	Vet ej/ ingen åsikt
För låg efterfrågan	❑	❑	❑	❑	❑	❑
För höga byggpriser	❑	❑	❑	❑	❑	❑
Problem med att få finansiering	❑	❑	❑	❑	❑	❑
Upphandlingsprocessen har varit för komplex	❑	❑	❑	❑	❑	❑
Plan-och byggprocessen medför hög risk	❑	❑	❑	❑	❑	❑
För höga markpriser	❑	❑	❑	❑	❑	❑
Brist på byggbar mark	❑	❑	❑	❑	❑	❑
Låg betalningsförmåga på orten	❑	❑	❑	❑	❑	❑
Låg betalningsvilja på orten	❑	❑	❑	❑	❑	❑
För höga avkastningskrav	❑	❑	❑	❑	❑	❑
Hög risk för nedskrivning	❑	❑	❑	❑	❑	❑
Annat alternativ						

7. Vid tidpunkten för upphandling, möjliggjorde Kombohus Bas byggande av bostäder för er?

❑ Ja, utan Kombohus Bas hade vi inte kunnat bygga

❑ Nej, vi hade haft möjlighet att bygga ändå

Kommentar

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8. Varför hade ni inte haft möjlighet att bygga?

	Tar helt avstånd	Tar delvis avstånd	Varken instämmer eller tar avstånd	Instämmer delvis	Instämmer helt	Vet ej/ ingen åsikt
För höga byggpriser	❑	❑	❑	❑	❑	❑
Vi har inte tillräckliga resurser	❑	❑	❑	❑	❑	❑
Vi har inte tillräckligt med erfarenhet	❑	❑	❑	❑	❑	❑
Upphandlingsprocessen har varit för komplex	❑	❑	❑	❑	❑	❑
Upphandlingsprocessen har tagit för lång tid	❑	❑	❑	❑	❑	❑

Annat alternativ

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9. Varför valde ni att bygga Kombohus Bas?

	Tar helt avstånd	Tar delvis avstånd	Varken instämmer eller tar avstånd	Instämmer delvis	Instämmer helt	Vet ej/ ingen åsikt
Okomplicerat beställningsförfarande	❑	❑	❑	❑	❑	❑
Prispressad produkt	❑	❑	❑	❑	❑	❑
Det innebar en kortare tidsprocess från idé till nyckelfärdigt hus	❑	❑	❑	❑	❑	❑
Beställaren sparar personalresurser	❑	❑	❑	❑	❑	❑
Kombohus håller hög kvalité.	❑	❑	❑	❑	❑	❑
Bra komplement till vårt existerande bestånd	❑	❑	❑	❑	❑	❑

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10. Vilken är den enskilt avgörande faktorn till att ni valde Kombohus Bas?

- ❑ Prispressat
- ❑ Enkelt
- ❑ Snabbt

Annat alternativ

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11. Är det sannolikt att ni kommer att producera bostäder med Kombohus konceptet igen inom en femårsperiod (ex. koncepten Plus, Mini eller Flex)?

- ❑ Ja
- ❑ Nej
- ❑ Vet ej

Kommentar

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12. Av vilken orsak bedömer ni att ni inte kommer att använda er av Kombohus konceptet igen?

(Endast ett svar är möjligt)

- ❑ Det blev inte så billigt som förväntat
- ❑ Processen var svår trots ramavtalet
- ❑ Det tog mycket längre tid än förväntat
- ❑ Vi är inte nöjda med det färdiga huset

Kommentar

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13. Kommer ni utöka antalet lägenheter vid nästa projekt?

- ❑ Ja
- ❑ Nej
- ❑ Vet ej

Kommentar

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14. Hur många Kombohus planerar ni att bygga?

Ange antal lägenheter, alternativt vet ej

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15. Dessa faktorer är avgörande för att möjliggöra byggande av nya bostäder för oss i framtiden.

	Tar helt avstånd	Tar delvis avstånd	Varken instämmer eller tar avstånd	Instämmer delvis	Instämmer helt	Vet ej/ ingen åsikt
Sänkta byggpriser	❑	❑	❑	❑	❑	❑
Anbudskonkurrens: Fler anbud vid varje upphandlingstillfälle	❑	❑	❑	❑	❑	❑
Fler aktörer som jobbar med industriellt byggande	❑	❑	❑	❑	❑	❑
Mer tillgång till byggbar mark	❑	❑	❑	❑	❑	❑
Förenklat regelverk	❑	❑	❑	❑	❑	❑
Tillgång till fler ramavtalsupphandlingar	❑	❑	❑	❑	❑	❑
Statligt investeringsstöd	❑	❑	❑	❑	❑	❑
Högre betalningsförmåga på orten	❑	❑	❑	❑	❑	❑
Högre betalningsvilja på orten	❑	❑	❑	❑	❑	❑
Lägre avkastningskrav	❑	❑	❑	❑	❑	❑

Annat alternativ

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16. Skulle ni rekommendera konceptet Kombohus till andra bostadsföretag?

- ❑ Ja
- ❑ Nej
- ❑ Vet ej

Kommentar

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17. Hur blev det ekonomiska utfallet i Kombohus Bas projektet?

- ❑ Utfall billigare än prognos
- ❑ Prognos och utfall blev samma
- ❑ Utfall dyrare än prognos
- ❑ Vet ej
- ❑ Projektet ännu ej färdigställt

Kommentar

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18. Har ni använt er av SAB:s kalkylmall för projektet Kombohus Bas?

- ❑ Ja
- ❑ Nej
- ❑ Känner ej till SABOs kalkylmall

Kommentar

För att utvärdera om konceptet har bidragit till lägre kostnader är det av stor vikt att erhålla de fakstiska kostnaderna från Kombohus projekten.

Vänligen bifoga SABOs kostnadskalkyler/egna kostnadskalkyler för Kombohus Bas I ett svarsmail via länken nedan. All information kommer att hanteras konfidentiellt.

19. Har du några kommentarer att tillägga om Kombohus Bas och dess ramavtal?

English version:

The framework procurement Kombohus Bas and its impact on the Swedish housing market

SABO's framework procurement Kombohus Bas is a concept that has been procured by a lot of members of the organization. The large number of procured Kombohus Bas projects enables the possibility to evaluate the concept and its impact on the Swedish housing market. The survey and the analysis are conducted by two students from KTH in cooperation with SABO. The survey takes about 10 minutes to answer.

Your participation is very valuable to us. In order to allow a full nationwide analysis, we hope that you take the time to participate.

1. **How many Kombohus Bas, have you procured up until today?**

Enter the number of apartments

---

2. **When did you last construct new housing other than Kombohus Bas?**

- ❑ Less than 3 years ago
- ❑ 3 years – less than 6 years ago
- ❑ 6 years – less than eleven years ago
- ❑ 11 years – less than 20 years ago
- ❑ 20 years or more

Comments

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3. **What type of dwellings have you mainly built in the past five years?**

(Possible to choose several options)

- ❑ Multi-family houses that are higher than four floors
- ❑ Multi-family houses that are four floors or less
- ❑ Single family houses
- ❑ Two-family houses

Other option

---

4. Why is it more than six years since you have built new dwellings?

We believe it has been because of:

	Totally disagree	Partly disagree	Does not agree nor disagree	Partly agree	Totally agree	Don´t know/ have no opinion
The demand is too low	❑	❑	❑	❑	❑	❑
The construction prices are too high	❑	❑	❑	❑	❑	❑
Financing has been a problem	❑	❑	❑	❑	❑	❑
The procurement process has been too complex	❑	❑	❑	❑	❑	❑
Plan and building process is too risky	❑	❑	❑	❑	❑	❑
Land prices are too high	❑	❑	❑	❑	❑	❑
Lack of developable land	❑	❑	❑	❑	❑	❑
Low ability to pay in the area	❑	❑	❑	❑	❑	❑
Low willingness to pay in the area	❑	❑	❑	❑	❑	❑
The rent levels in the area are too low	❑	❑	❑	❑	❑	❑
The yields are too high	❑	❑	❑	❑	❑	❑
High risk for impairement	❑	❑	❑	❑	❑	❑
Other option						

---

5. Why is it more than 11 years since you have built new dwellings?

We believe it has been because of:

	Totally disagree	Partly disagree	Does not agree nor disagree	Partly agree	Totally agree	Don´t know/ have no opinion
The demand has been too low	❑	❑	❑	❑	❑	❑
Construction costs are too high	❑	❑	❑	❑	❑	❑

Financing has been a problem	❑	❑	❑	❑	❑	❑
The procurement process has been too complex	❑	❑	❑	❑	❑	❑
Plan and building process is too risky	❑	❑	❑	❑	❑	❑
Land prices are too high	❑	❑	❑	❑	❑	❑
Lack of developable land	❑	❑	❑	❑	❑	❑
The possibility to pay is too low in the area	❑	❑	❑	❑	❑	❑
Low willingness to pay in the area	❑	❑	❑	❑	❑	❑
The required rate of return is to high	❑	❑	❑	❑	❑	❑
High risk for impairement	❑	❑	❑	❑	❑	❑
Other option						

---

6. Why is it more than 20 years since you have built new dwellings?

We believe it has been because of:

	Totally disagree	Partly disagree	Does not agree nor disagree	Partly agree	Totally agree	Don´t know/ have no opinion
The demand has been too low	❑	❑	❑	❑	❑	❑
Construction costs are too high	❑	❑	❑	❑	❑	❑
Financing has been a problem	❑	❑	❑	❑	❑	❑
The procurement process has been too complex	❑	❑	❑	❑	❑	❑
Plan and building process is too risky	❑	❑	❑	❑	❑	❑
Land prices are too high	❑	❑	❑	❑	❑	❑
Lack of developable land	❑	❑	❑	❑	❑	❑

The possibility to pay is too low in the area	❑	❑	❑	❑	❑	❑
Low willingness to pay in the area	❑	❑	❑	❑	❑	❑
The required rate of return is to high	❑	❑	❑	❑	❑	❑
High risk for impairement	❑	❑	❑	❑	❑	❑

Other option

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7. At the time of the procurement, did Kombohus Bas enable you to build new dwellings?

❑ Yes, without Kombohus Bas we would not have been able to build

❑ No, we would have been able to build without Kombohus Bas

Comment

---

8. Why were you not able to build?

	Totally disagree	Partly disagree	Does not agree nor disagree	Partly agree	Totally agree	Don´t know/ have no opinion
Construction prices are too high	❑	❑	❑	❑	❑	❑
We have a lack of resources	❑	❑	❑	❑	❑	❑
We have not enough experience	❑	❑	❑	❑	❑	❑
The procurement process has been too complex	❑	❑	❑	❑	❑	❑
The procurement process has taken too long	❑	❑	❑	❑	❑	❑

Other option

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9. Why did you choose Kombohus Bas?

	Totally disagree	Partly disagree	Does not agree nor disagree	Partly agree	Totally agree	Don´t know/ have no opinion
Uncomplicated ordering process	❑	❑	❑	❑	❑	❑
Lower construction costs	❑	❑	❑	❑	❑	❑
It implied a shorter timeline, from concept to turnkey-ready house	❑	❑	❑	❑	❑	❑
The client saves labour resources	❑	❑	❑	❑	❑	❑
Kombohus Bas maintains high standard.	❑	❑	❑	❑	❑	❑
Good complement to our existing stock	❑	❑	❑	❑	❑	❑

Other option

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10. What is the single most important factor for choosing Kombohus Bas?

❑ The lowered construction costs

❑ The simiplicity

❑ The time savings

Other option

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11. Will you construct new dwellings with the Kombohus concept again (eg. the concepts Plus, Mini or Flex)?

❑ Yes

❑ No

❑ Don´t know

Comment

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12. For what reason will you not use the Kombohus concept again??

(Only one answer is possible)

- ❑ It was not as cheap as expected
- ❑ The process was difficult despite the framework agreement
- ❑ It took much longer than expected
- ❑ We are not satisfied with the finished building

Comment

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13. Will you increase the number of apartments in the next project?

- ❑ Yes
- ❑ No
- ❑ Don´t know

Comment

---

14. How many Kombohus are you planning to build?

Enter the number of apartments, or do not know

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15. These factors are crucial to enabling construction of new dwellings for us in the future.

	Totally disagree	Partly disagree	Does not agree nor disagree	Partly agree	Totally agree	Don´t know/ have no opinion
Lowered construction prices	❑	❑	❑	❑	❑	❑
Tender Competition: More bids for each contract,	❑	❑	❑	❑	❑	❑
More actors who work with industrial construction	❑	❑	❑	❑	❑	❑
More access to developable land	❑	❑	❑	❑	❑	❑
Simplified regulations	❑	❑	❑	❑	❑	❑
Access to more framework agreements	❑	❑	❑	❑	❑	❑
Governmental investment support	❑	❑	❑	❑	❑	❑

Higher ability to pay in the area	❑	❑	❑	❑	❑	❑
Higher willingness to pay in the area	❑	❑	❑	❑	❑	❑
Lower yield	❑	❑	❑	❑	❑	❑

Other option

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16. Would you recommend the concept Kombohus Bas to other housing companies?

- ❑ Yes
- ❑ No
- ❑ Don´t know

Comment

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17. What was the financial outcome of Kombohus Bas?

- ❑ Outcome cheaper than forecasted
- ❑ Forecast and outcome were the same
- ❑ Outcome was more expensive than forecasted
- ❑ Don´t know
- ❑ Project not finished

Comment

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18. Have you used the SABO calculation tool for Kombohus Bas?

- ❑ Yes
- ❑ No
- ❑ Do not know of the SABO calculation tool

Comment

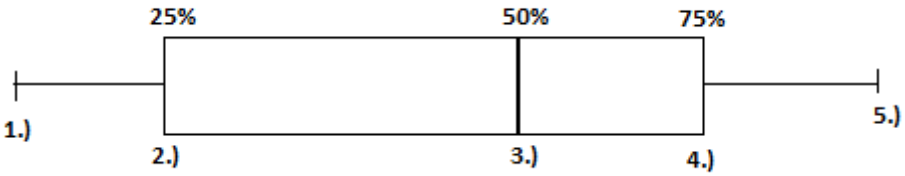
To evaluate whether the concept has contributed to lower costs, it is of great importance to obtain the actual costs of Kombohus Bas projects.

Please attach the SABO costs estimations and outcome for Kombohus Bas in a reply email through the link below. All information will be treated confidentially.

19. **Do you have any comments to add about Kombohus Bas and its framework agreement?**

Appendix 5. Explanation of the boxplot diagram

The boxplot used in the results chapter illustrates the distribution of data. Below is an explanation of how to interpret the diagram.



1.) Minimum – the least value
2.) The lower quartile – 25% of the data is less than this value
3.) Median – 50%, middle of the data set
4.) The upper quartile – 25% of the data is greater than this value
5.) Maximum- the greatest value

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