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Why isn't there enough housing?

A study of why some municipalities are able to construct more than others taking a political perspective

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Abstract

In 1947 the municipalities in Sweden received the monopoly to decide on and plan their land. Despite this, over 80 percent of the municipalities in Sweden say they experience lack of housing today. This thesis applies The Homevoter Hypothesis introduced by William A. Fischel in 2001 to try to explain why some municipalities are not able to construct enough housing for their inhabitants. The hypothesis says that homeowners become watchers of their local government to protect their largest asset, their home. To keep the value of their home from decreasing due to insufficient regulation they become involved in politics. If the homeowners are a majority, municipalities have no choice but to accommodate the inhabitants' interests.

The study investigates the number of newly started constructions of multi-dwellings and one- or two-dwelling separately in each municipality in Sweden between 2010 and 2017 using a regression analysis. The result shows that the number of constructed one- or two-dwellings is positively affected by a right-wing as well as a cross-functional collaboration local government. An increase in population, average income and possible profitability for firms has a negative impact while an increase in price and a larger existing stock have a positive impact. When looking at multi-dwellings, I find that increases in price, possible profitability from construction and population affect the number of constructions positively, while an increase in average income has a negative impact. I find no evidence that a certain political orientation of the ruling local government has any impact on the number of constructed units.

Next, I use a difference-in-difference method to examine if a shift in power in the election in 2014 makes any difference in the number of newly started housing units. The result shows that a shift in power, in general, does not make any difference. However, if I sort the sample after the political orientation of the newcomers I find that voting a right-wing local government into the office reduces the number of constructed multi-dwellings while voting for a left-wing government reduces the number of started one- or two-dwellings. The study shows that the same holds for areas with a low Tobin's Q ratio, in the biggest municipalities according to population and in areas with a relatively low price per square metre. The entrance of a government with a cross-functional collaboration has a positive impact on both the number of one- or two-dwellings and the number of multi-dwellings in areas with a low Tobin's Q ratio.

Key words: politics, housing supply, municipality monopoly, building permit, housing shortage, shift in power, OLS, Difference-in-difference

Contents

- 1. Introduction 4
- 2. The Swedish housing situation 5
 - 2.1 Local differences between municipalities 7
 - 2.2 Political suggestions ahead of the election in 2014 10
- 3. Literature Review 11
- 4. Theoretical Framework 12
- 5. Part 1 13
 - 5.1 Methodology and data 13
 - 5.2 Result 16
 - 5.3 Analysis of results from Part 1 20
- 6. Part 2 22
 - 6.1 Methodology and data 22
 - 6.2 Result 24
 - 6.2.1 Test of assumptions of the Difference-in-Difference model 26
 - 6.3 Analysis of results from Part 2 26
- 7. General analysis and discussion 27
- 8. Conclusion 29
- Bibliography 30
- Appendix 34

1. Introduction

Today, 243 out of 290 municipalities in Sweden say that they are short of housing, and 196 municipalities say that they predict to still be within three years from now (Boverkets, 2018b). At the same time, prices of private one- and two dwellings in Sweden have quadrupled on average compared to the price level 20 years ago (SCB, 2018d). Prices of tenant-owned properties in the three big cities, Malmö, Gothenburg, and Stockholm have increased even more, reportedly around 600% (Kainz Rognerud, 2014). Considering that factor cost index, consisting of input goods needed for construction, for both multi-dwellings and private houses only doubled during the same time (SCB, 2018c) one would assume the housing market to be attractive for firms and investments. So how come barely 20% of the municipalities expect to be able to build enough housing for their inhabitants within three years? Can it be that the political government in the municipalities themselves have incentives not to allow it to happen? Does it matter if you let anyone else take their place in the office?

This study aims to look into why some municipalities are able to meet demand at a higher degree than other using a theory that municipalities are economic actors and not just institutions. The concept is introduced as the “Homevoter Hypothesis” by William A. Fischel (2001) and says that local inhabitants care more about the design and current well-being of their neighbourhood, and the value of their biggest asset; their house, than the general lack of housing. The inhabitants decide on the fate of the incumbent government, which forces the local government to accommodate the inhabitants’ interest. The ruling organisation in the municipalities therefore make decisions to maximize the value of the citizens' housing and thereby have incentives not to allow construction in order to remain in the office. Considering that homeowners are overrepresented in all but five municipalities in Sweden and that it is the citizens that put local governments in place in the election every 4th year, the theory is applicable in Sweden as well as in the U.S.

The analysis covers the years from 2010 to 2017 and is separated into two parts. In the first part, I will investigate the price elasticity of housing supply controlling for political orientation, population growth, income, existing stock, and profitability of investments in order to find out what affects the number of new constructions. I divide the housing stock into multi-dwellings and one- or two-dwellings and study them separately using a regression analysis. The result shows that municipalities with a right-wing government or a cross-functional government, in general, construct more one- or two-dwellings but there are no statistical differences when looking at multi-dwellings. The number of started constructions is instead mainly explained by price, the possible profitability for firms, population, and the existing stock.

The second part examines whether a shift in power in the election in 2014 have any effect on the number of constructed units using a difference-in-difference method. When studying if a shift to a certain political orientation has any effect I find that changing to a left-wing local government

decreases the number of started one- and two-dwellings while shifting to a right-wing ruling decreases the number of started multi-dwellings.

To my knowledge today, there exist no similar studies looking into politics in Sweden even though the subject is often debated both among inhabitants and in media (see e.g. Svenska Dagbladet (2018), Attefall (2018), Myrne-Widfore (2017) and Svantesson (2015)). Earlier studies tend to look into housing supply elasticity on a regional or national level as well as leaving political effects out. Lindenau Stokke (2016) examines why some municipalities are able to construct more apartments than others, but does not investigate one- or two-dwellings or political aspects.

The study is structured in the following way. The next chapter presents a background and further introduction. A literature review of existing studies follows in chapter 3. The theoretical framework is presented in chapter 4. I then present used variables together with methodology, result and analysis of Part 1 in chapter 5. The second part is presented in chapter 6 using the same setup as the first part. Last, the result from both parts will be discussed and evaluated in chapter 7 followed by a conclusion.

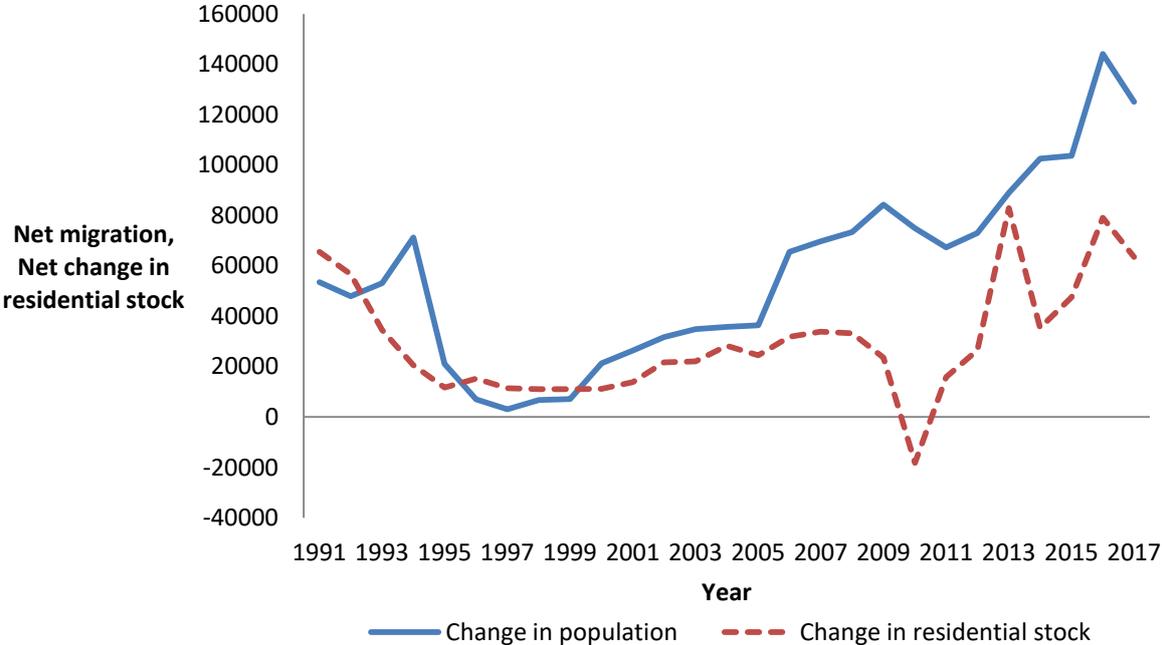
2. The Swedish housing situation

When talking about the history of housing construction in Sweden one often starts with the Million Homes Programme which took place between 1965-1974 (Boverket, 2014). The Swedish Social Democratic Party initiated the program at a national level as a part of their concept Folkhemmet aiming to establish a broad welfare (Hall & Vidén, 2005). The purpose of the project was to build 1 000 000 new dwellings to get rid of the cramped housing situation and to raise the general housing standard. During the decade, the Swedish left-winged government secured loans to build 100 000 housing units per year with further benefits for industrial and high scale production (SOU 1965:32). The lack of housing turned into a surplus a few years into the 70s (Hall & Vidén, 2005).

After the end of the project until the financial crisis that hit Sweden at the beginning of the 90s, the average number of newly constructed housing was approximately 50 000 a year. Together with a low increase in population during the same time period, this meant that the stock of housing was sufficient during the 90s both historically and compared to other countries. During this time, the politics changed, and the governmental intervention for the housing market was terminated. (Boverket, 2011)

Since 2000, the population in Sweden has increased by over 1.2 million people. During the same time period, the number of dwellings increased with around 550 000 (SCB, 2018a & SCB, 2018f). In 2017, a record high number of municipalities, 255 said that they are short of housing, an increase of almost 40% over the two years before (Boverket, 2017a). In 2018, 243 municipalities said they were still short of housing, including all municipalities in the three big city areas. This means that 12 municipalities have been able to reach balance during 2017. 48 predict to do within three years

(Boverket, 2018b). At the same time, the queue for a rental-apartment has never been longer. 600 000 people were in line for the 12438 apartments handed out in Stockholm during 2017 (Langert, 2018). In Gothenburg, 218 200 people are waiting in line (Dorian, 2018) and in Skåne, it might take up to 7 years in line before one is offered an apartment (Fridh, 2016).



Source: SCB, 2018a & SCB, 2018e & SCB

According to Statistics Sweden (2018b), slightly under 70 percent of the households on a national level own their housing today, whereof 53 percent lives in a one- or two-dwelling making it the most common way of living (SCB, 2018b). The homeowners are overrepresented in 285 municipalities, with Vallentuna, Täby, and Lomma in the top where the group represents 93.9, 91.1 and 90.1 percent of the total households respectively. The lowest percent of homeowners are found in Gothenburg, Södertälje, and Örebro with 45.9, 44.6 and 43.2 respectively. In 2016, 39 percent of the households consist of 1 person, making the Swedes the loneliest people in the world (TT, 2016).

Statistics Sweden estimates the future population to reach 12 million around 2050. Even though there exists some uncertainty about the estimate, they assume the population to increase by about a 100 000 people a year in the coming years. The population is expected to increase the most in Stockholm, Västra Götaland and Skåne (Bergendahl, et al., 2015), areas which, as mentioned above, experience problems with lack of housing today. Until 2025, Boverket expects the need of new constructions of housing units to reach 600 000 (Boverket, 2017b).

A well-functioning housing market is of importance for an efficient growth (Bergendahl, et al., 2015). It is crucial in the process of matching an employer to a worker, to make it possible for people to move

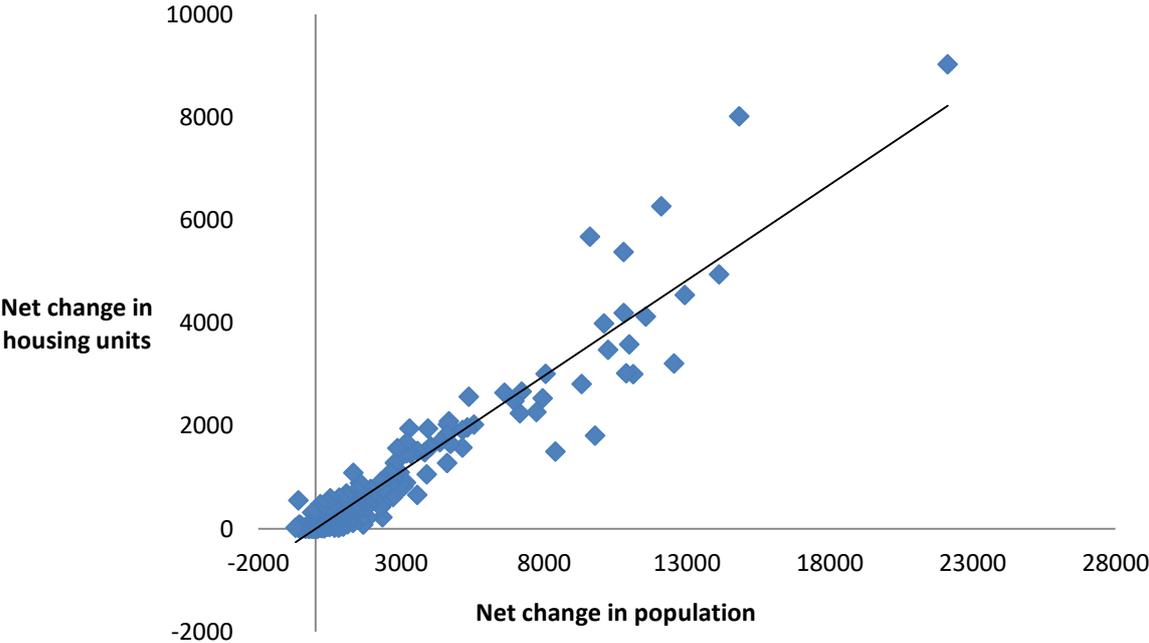
and study but also to keep the population healthy when the different housing is needed as life changes with time. In the short run, a defect housing market impact construction investments. In the medium- and long-run the market also affect the macroeconomic development through the populations' debt and thereby consumption and the financial stability (Bergendahl, et al., 2015).

It is hard to measure the economic effect of insufficient housing and the associated high transaction costs since people move for other reasons than work and people change jobs without moving. However, WSP Analys & Strategi (2013) estimates the total loss in production to somewhere between 330-660 billion Swedish crowns between 2010 and 2030 if construction in Stockholm only is not able to keep up with the potential of the city.

2.1 Local differences between municipalities

On a country level, there is no doubt Sweden needs more housing. However, regional differences are present. Due to urbanisation, municipalities in the three big city areas and other cities of medium size experience a positive net-migration while municipalities in more rural areas see small changes or even pass through depopulation. The population in the big cities is growing four times as fast as the population in the rest of the country, but the number of constructions is only two to three times higher meaning an increasing cramped housing accommodation (Boverket, 2011).

The diagram below shows the change in population in relationship to change in housing stock from 2010 to 2017. I consider Malmö, Gothenburg, and Stockholm as outliers since they construct a lot more and experience a way bigger in-migration than other municipalities and therefore choose to exclude them.



Source: SCB, 2018a & SCB, 2018e

As can be seen, some municipalities are able to meet demand at a higher degree than others. The municipalities building the most relative to increase in population is Uppsala, Örebro, Linköping, Lund, Sundbyberg, Jönköping, and Umeå. Also, all except Sundbyberg are university cities and five out of the ten municipalities in the upper scale have a right-wing government (Byggindustrin, 2018).

The development in Örebro and the municipality have been famous the last years for their way of dealing with the housing situation. The city has been able to meet demand at a high degree partly because of the economic boom but also because of the way the municipality has been working since the 90s. The differences between Örebro and other municipalities are that they use fixed land prices and sell the land first after the issuing of a building permit. The construction firm is then bound to build due to an agreement made before the planning process. Also, a plan with a standard design only needs approval once and not every time as in other municipalities. (Jansson, 2017)

Municipalities that are not able to keep pace with the ones mentioned above are Helsingborg, Västerås, Huddinge, Solna, Nacka, Norrköping, Haninge, Järfälla, Södertälje, Botkyrka, and Eskilstuna. Six of them are located in the greater Stockholm area.

So how come some are able to construct more than others?

Boverket (2018) expect that construction of 83 800 new housing units will be started during 2018, and 90 900 in 2019. Even if many houses are built, it is according to the municipalities themselves not enough. As a reason for not building more, 171 municipalities say it is because of high production costs, 112 say they lack planned land and about a 100 say it is because the population has trouble getting a mortgage (Boverket, 2018). According to other studies (see e.g. Cars et al 2013, Bokriskskommitten 2014, Bergendahl et al 2015 and Lind 2016) there are many contributing factors to the lack of housing. Discussed areas are, among others, the regulation of rents, state interests, financial aspects and geographical and demographical changes as well as immigration. Another hot topic is the municipality monopoly, which is what this thesis will focus on. According to NCC (2012), one of the big four construction firms in Sweden, the main reasons construction is expensive for them is the lack of planned land, expensive land, time-consuming planning processes, many appealing processes and special regulations in different municipalities. Reasons which are all affected by the monopoly.

The decentralisation from state level to municipality monopoly was made to ensure decisions made on a good basis and close to the concerned people as well as citizens' influence. The regulations have developed during the years after its implementation in 1947 (Boverket, 2011) and can today be interpreted as a reaction to the massive construction that took place in the 1950s and 60s which in the aftermath is seen as bluster of demolition and lack of perspective (Lind, 2013).

The decentralised process causes local differences. In 2015 The Swedish Association of Local Authorities and Regions (SALAR) asked municipalities about the median time it took from a request

for planned land until approval between 2013 and 2015. 170 municipalities answered, with an average of 16.6 months. The longest median time was 50 months while the shortest was only three (Kolada, 2018). NNR investigates the local differences regarding a building- and planning-permit and found that the handling time for the same type of project can differ with 11 weeks and up to 165 000 Swedish crowns while the cost of the building permit itself vary from 4000 in Salem to 50561 in Kungsbacka (Liljeqvist, 2016).

The cost of a plan- and building permit for a housing unit has on an average more than quadrupled between 1990 and 2015. The issuing of permits can be seen as a service offered by the municipality and then be compared to the general index of pricing of services, which during the same time increased by only 70% (Dratos & Lind, 2015). The difference between the municipality charging the lowest and the most in 1990 was 560% while in 2015 it had decreased to 363%. The increase in cost for a plan- and building permit may have different explanations, such as the economic situation of the municipality and that they see the surplus from increasing housing prices as an opening for allocation. The administration charges are also overall a small part of the total cost of building a house (Johansson & Lind, 2015).

When talking about the municipalities' income from construction it mainly derives from selling land as well as property taxes. The gain from income taxes will rise if population increases, if only overcrowding decreases, then the post is not affected. The need for direct investments differs between areas and if there is a need for new infrastructure. Administrative cost are usually covered by the developer but the municipalities still need to evaluate the need for schools, child care, elderly care and other social institutions. (Lind, 2016)

Construction can cause negative externalities for residents owning their housing in the municipalities, such as an increase in traffic and noise, sacrificed recreational areas and lower market value of their main asset, their house. While the loss of current inhabitants is easy to measure, as the lower market value, the winners of a constructed area are harder to identify which leads to a priority for the first group by the government. (Lind, 2013)

The opposition might be bigger if the houses built are low pricing houses, as it might mean that poor people are moving into the area. Some municipalities also consider themselves to have taken their social responsibility (Lind, 2013). The worries about poorer people's standards of living go way back. Sheiban (1995) studies the planning process in Stockholm in the late parts of the 19th century. He finds that the ruling organisation connected the way of living of the working class to their housing situation, assuming their social and hygienic status a threat to the society.

The municipality monopoly is strong for several reasons. Developers and inhabitants have incentives not to appeal a decision since they are depending on the local government in other projects and in the

future (Lind, 2016). Also, an incentive for the developers not to try to affect municipal government more is, according to Lind, that it is better for the one building if no one else builds since it would raise the competition. Firms also have incentives not to construct the whole land area at the same time, since prices are relatively inelastic in the short run. By building small amounts for a long time, they avoid decreasing prices (Lind, 2016).

2.2 Political suggestions ahead of the election in 2014

Election of the local government in the municipality happens every fourth year. They do not have any right to change laws or regulations but as mentioned above, they have a monopoly on planning land and to give out building permits. 1% of the voters categorised the housing question as important on a national level both prior to the election in 2010 and 2014 (Valforskningsprogrammet, 2018).

I have summarized the parties' policies ahead of the election in 2014. Ola Ström collects all information for Fastighetsägarna Mittnord, an industry organization, from different sources related to the parties and their actions, on a national level as well as local. Ström presents his results in the report "Who takes party for housing?" from 2014.

The right-wing consist of four parties; The Moderate Party, The Christian Democrats, The Centre Party and The Liberals. Ahead of the election in 2014 the parties together as the Alliance said the main goal during the length of the office until 2018 was to build 150 000 new housing units, primarily in Stockholm. More loose regulations should make it possible to make more land available to allow for more scale economy and more than one constructed house. They also want more construction outside of big cities and more housing for students.

The left-wing consists of The Social Democratic Party, The Green Party and the Left Party and is often denoted as the Red-Green. The parties suggest construction of around 40 000 housing units each year with a goal of 250 000 new constructions until 2020 made possible by a bonus system for student housing and small apartments and a more rapid planning processes. Decrease production cost and increase investment by making it possible for small and medium-size companies to compete in the industry.

There is an eighth bigger party in Sweden, The Swedish Democrats. However, they are not present in any ruling local government and therefore, their opinions are not mentioned. Regarding minor local parties, ruling together with the bigger ones in cross-function collaborations, their opinions are not presented as the effect of their local impact is hard to encounter.

On a national level, the right- and left-wing tend to not collaborate but on a local municipality level, it is common that they do. I have in this study denoted the absence of a clear political orientation in the

local government as a cross-functional collaboration. If all of the ruling parties belong to the Red-Green I use the term left-wing and if all belong to the Alliance I use the term right-wing.

3. Literature Review

Lindenau Stokke (2016) conducts a study on why some municipalities are able to build more apartments than others from 2007 until 2014 using a regression analysis. The author concludes that an increase in population contributes the most to increase in housing supply, but also that a lot of unused forest land and a right-wing local government has a positive impact. High taxes and an old population have a negative impact.

Boverket (2011) presents a study where they use a regression model consisting of two equations to explain the housing investments between 1980 and 2010. The authors assume the households' real disposable income, user cost, the existing housing stock and the population aged between 25 and 44 determine prices. Then the prices estimated in regression one, production cost and the total population explain investments. The authors find long-run supply elasticity between investment and price equal to 2.7 percent and estimate a shock to be halved in two years. They also find that the elasticity of production cost is -6.2 percent, indicating that investments are more than twice as sensitive to changes in costs as to changes in prices. Last, the authors find that the number of constructions is on or close to its long-run path.

Caldera and Johansson (2013) study the price responsiveness to housing supply of 21 OECD countries, including Sweden. The authors use data from a time period spanning from the 1980's to the mid-2000's and use an Error Correction Model. Their result says that the price elasticity of housing supply to housing prices is fairly high in Sweden. Their estimates suggest that the average elasticity was 1.38 with a speed of adjustment coefficient of -0.13, meaning that 13% of an eventual disequilibrium will be accounted for within a year. The authors suggest that a lot of things, such as demographic and geographic conditions, building permit processes and other policies as well as the price of rentals affect the speed of adjustment.

Many authors investigate whether a relationship between Tobin's Q and the level of investments in housing exists. For example, Takala and Tuomala (1990) find significant coefficients for the Q-ratio in Finland, Jud and Winkler (2003) find it for the US when studying the level of actual investments. Jaffee (1994) finds a positive correlation in Sweden when investigating a time period during the 90s. Berg and Berger (2005) use the theory to look for a structural break following political changes just before the financial crisis at the beginning of the 90s and find significant results for a long run relationship between 1993 and 2003 but not for the period 1981-1992.

In opposite to what Lindenau Stokke (2016) finds, the construction industry tabloid Bygginindustrin (2018) finds that the political orientation does not have any greater impact on the amount of construction. Nilsson (2004) investigates the housing policy of The Moderate party, belonging to the right-wing. He finds that even if The Moderate party has pushed for market and private solutions and as little political involvement as possible the last 100 years, they did not make any great changes to the housing policy when entering the government in 1976.

Glaeser, Gyourko, and Saks (2005) suggest when analysing the price development in Manhattan that the substantial gap between the price of housing and the construction cost derives from a local government limiting construction. Restrictive zoning and land regulations make the supply very inelastic. The authors compare the actual market value of a newly constructed apartment to the marginal cost of building up because building up does not involve more land cost.

Kiarie (1996) examined the effects of the removal of zoning regulation in Houston, the only metropolitan area in the US which has done this. The study shows that the absence of a zoning regulation has not made Houston a more sprawling city, but it has reduced the value of houses in affected areas. Houston has a higher population density gradient in absolute terms. The same holds for the housing price gradient. Both are higher in absolute terms than in other cities included. The gradient is the percentage increase in population coming from one extra mile from the city centre.

4. Theoretical Framework

William A. Fischel argues in his book "The Homevoter Hypothesis, How Home Values Influence Local Government Taxation, School Finance and Land-Use Policies" published in 2001 that homeowners become watchers of the local government to protect their largest asset, their home. The asset comes with a risk that cannot be diversified, such as the risk of higher city tax, neighbourhood changes and schools with falling reputation. These are policy changes induced by the local municipality governance that will potentially decrease the value of their home.

The concept is rather straightforward. All other things equal, people will pay more for housing in a good neighbourhood with good schools or a safe environment or lower taxes than an identical housing in a worse neighbourhood. The same goes for everything affecting their quality of life, such as sea view, noise and amount of traffic. What is good for the area is also good for the homeowners.

The risk that cannot be diversified away, the uninsurable risk of owning a house, only exists if local taxes and service provided are capitalized into house value. This happens if the supply is inelastic in the short run, hindering outsiders to enter the neighbourhood. This inelastic supply partly comes from zoning regulation, which in Sweden is managed by municipalities. In 1990, Fischel studies how adopting more restrictive zoning regulations will impact the value of inhabitants housing. He finds that

it will lower the value of undeveloped land in the suburbs and increase the value of developed houses (Fischel, 1990). In 1992, Fischel states that environmental protection, anxiety about crime and social exclusivity motivates zoning (Fischel, 1992).

Fischel suggests that the only thing inhabitants can do to reduce the market risk of their biggest financial investment is to become involved in local politics. Another reason for them to do so is the high transaction costs associated with moving when owning your house. If the home-owning group is a majority the political leaders will have no choice but to accommodate the inhabitants' interest and by that, aim to maximize the value of their homes. The result is consistent with the idea that the median voter owns its house and does not benefit from construction in their neighbourhood (Fischel, 1990).

The median voter comes from the "Median Voter Theorem" originally introduced by Duncan Black (1948) and made famous by Anthony Downs (1957). The theorem says that the politicians wanting to maximize the number of votes should act the way the median voter prefers. If two alternatives exist, then it is a Nash-Equilibrium if both adopt the median voters' opinion. This in turns leads to that both parties can expect to get half of the votes since the voters are indifferent, and by changing policy or opinion the party loses the election.

5. Part 1

The first part will investigate the impact of different factors on the number of newly constructed multi-dwellings as well as one- or two-dwellings using a regression analysis.

5.1 Methodology and data

To be able to investigate why some municipalities are able to meet housing demand to a higher degree than others I will use two techniques. I will divide the municipalities into subgroups by local political orientation and then provide mean and standard deviation for all included variables for the groups. I then compare the mean values using a t-test.

I run an OLS-regression to be able to identify the impact of my explanatory variables on the number of started constructions. I run the regression twice, once for one- and two dwellings and once for multi-dwellings. The focus is on supply elasticity of construction in relationship to price controlling for political orientation, population growth, attractiveness to invest, average income, and existing stock of housing (Full overview of used variables can be found in Appendix 1). Since I am interested in why some municipalities are able to meet demand independently of when this is done I do include period fixed effects. As a complement, I also present results from when I exclude period-dummies and instead include municipality-specific fixed effects. I run the regressions using robust standard errors.

The regressions are estimated as follows:

$$\begin{aligned} \ln(\text{started units}) = & \\ & \gamma_0 + \gamma_1 \ln(\text{average price per sqm}) + \gamma_2 \text{average income} + \gamma_3 \text{population} + \gamma_4 \text{existing stock} + \\ & \gamma_5 \text{Tobin's } Q + \gamma_6 \text{right wing} + \gamma_7 \text{crossfunctional collaboration} + \varepsilon \end{aligned} \quad (1)$$

As my dependent variable, I use the number of started units on a yearly basis, recalculated from quarterly data which is provided by Statistics Sweden. My preferred variable would have been the number of issued building permits, which reflects when the decision of a firm's investment is approved by the municipality. But data of issued building permits is only available on a county level and it is impossible to know in which municipality it is issued. By assuming that start of construction to take place a relatively short time period after the issuing of the building permit I consider my dependent variable to be an adequate replacement. I also assume that the firms' final decision on whether to build or not is taken after the building permit is issued and therefore all variables used are collected for the time span 2010-2017 and used without lags.

The choice of explanatory variables is in line with Boverket (2011) where the author assumes real disposable income, user cost, the size of the population and the existing housing stock to explain price elasticity. Since I use a model consisting of one equation I include the variables, except user cost, as control variables straight into my supply elasticity regression. My choice is also in line with basic housing supply theory, saying that supply is affected by income, user cost and existing stock (Sørensen & Whitta-Jacobsen, 2010).

User cost consists of depreciation of existing housing, average mortgage rate and the expected return on capital. However, assuming that the user cost is equal for all municipalities, time fixed-effects will absorb changes in user cost.

A change in demand in the housing market is channelled into prices because supply is completely inelastic in the short run. Therefore, prices are expected to increase before quantity in an efficient market (Lind, 2013). I assume firms making decisions about investments to take the current pricing into account to account for possible profit when they sell the constructed houses. I collect prices from Kolada, denoted as Swedish crowns per square metre and presented on a yearly basis. A price of a housing unit is, if not newly constructed, a negotiation between a seller and a buyer indicating that a single transaction must not represent the actual market value of a unit. However, considering a large number of real estate is sold each year, an average of the aggregated sum can be considered to represent the average market value (Berger, 2000).

Considering that increases in prices make construction more profitable for firms, everything else equal, I expect the sign of the coefficient to be positive, indicating positive supply elasticity. However,

according to theory, inhabitants with higher asset values in their housing want more zoning regulations which should indicate a decreasing marginal amount of constructions as price increases.

Average disposable income for inhabitants being between 20 and 64 is collected from Statistics Sweden and expressed on a yearly basis. Boverket (2011) says that one usually can be assumed to demand a house between the age of 20-44. I choose to extend the range to 64 as I do not find it controversial to assume people to demand a house at least until they retire. My hypothesis about the sign of the coefficient is not clear. According to micro theory, an increase in income should increase the will to consume, triggering prices which then will increase investments (Sørensen & Whitta-Jacobsen, 2010). However, the same argument regarding the Homevoter Hypothesis as above holds, as income increases inhabitants have more money in their house and therefore can be assumed to be more protective. Because of this, I do expect the marginal construction with increasing income to be decreasing.

I collect population as the number of inhabitants in each municipality from Statistics Sweden. I include the variable to take demographical differences into consideration and at the same time account for in- and out-migration. The sign of the coefficient is hard to predict, as an increase in population would imply a higher demand, higher prices, and more construction. However, there is a causality problem as lack of housing could lead to fewer people moving in. To investigate this, I perform a Granger Causality test. To account for regions where in-migration does not lead to an increase in demand, due to a satisfying stock of housing, I also include the number of existing units, expecting the coefficient to be negative. The number of existing units is collected from Statistics Sweden.

To be able to incorporate regional differences in production- and land cost and the variation in attractiveness to invest in different areas I include the local Tobin's Q ratio. The ratio is popularised by James Tobin in the article "A General Equilibrium Approach to Monetary Theory" in 1969. For this study, the Q-ratio is adjusted to the housing market with the market value of an existing house in the numerator and total construction cost of a new one in the denominator. If Q is above one, a crown invested in a new house is worth more than a non-invested crown. Since profit for the construction firm is included in the production cost, a ratio over one is an indicator that excess return is possible.

As mentioned above, many authors have found relationships between investments and the Q-ratio in other countries as well as in Sweden (see e.g. Takala and Tuomala (1990) and Jaffee (1994)) and since municipalities are able to influence both land cost and production cost through their monopoly I expect it to add explanatory power to the regression. I do expect the coefficient to be positive, since if it is attractive to invest, then rational and profit-driven actors will try to increase supply.

The Tobin's q ratio is calculated as follows:

$$Tobin's\ q = \frac{Adjusted\ Market\ Value}{Total\ production\ cost/QI} = \frac{Market\ value * Depreciation\ coefficient}{(Land\ cost + construction\ cost)/QI} \quad (2)$$

I collect average market value from Kolada and the production- and land cost as well as the quality index from Sweden Statistic. Production- and land cost is denoted in Swedish Crowns per square metre to allow for comparison to average market value. The adjustment to depreciation is calculated using data over the age of the existing stock from Statistics Sweden. This is because the idea behind the ratio is to compare production cost to a new build house. Since most of the houses sold on the Swedish market are used their market value has to be adjusted to a new build standard. I choose to use the same method as Berger (2000) uses, assuming the yearly depreciation rate of a house to be 1%. For example, if the average house in a municipality is 38 years old, I raise the average selling price in the area by 38%.

In the denominator, I use total production cost per square metre. Data is available at Statistics Sweden at a regional level. The regions can be said to be separated into north, middle and south Sweden and then the three metropolitan areas are presented separately. More local data would be appreciated but the production cost can be expected to differ a lot less than the market value of the constructed houses within the regions. The region division can be found in Appendix 2.

Last, the ruling local governments in the municipalities are coded into dummies where I use left-wing as the reference group and then add one dummy for right-wing governments and one for cross-functional cooperation.

The data over the political orientation from 2010 until 2014 is collected from the National Election Board; Valmyndigheten, while the data after the election in 2014 is collected from the Swedish Association of Local Authorities and Regions (SALAR).

5.2 Result

The estimated means and standard errors for each variable are presented below, together with three t-tests. The first test, column 4, tests if there exists a difference between municipalities voting for a right-wing government and a left-wing. The second puts areas voting for a cross-functional collaboration ruling against left-wing and the last one in column 6 looks into if there are any differences between municipalities voting for a cross-functional collaboration and those putting a right-wing organisation in the office.

TABLE 1

Means, standard deviations and t-tests of used variables presented for municipalities separated after political orientation.

	(1) Left-wing	(2) Right-wing	(3) Cross-function
Multi-dwellings	10,359.53 (29,938.34)	9,042.15 (34,004.13)	6,083.85 (8,533.28)
One-or Two-dwellings	7,032.91 (7,395.52)	7,528.68 (6,226.11)	6,836.58 (5,206.10)
Started multi-dwellings	95.28 (361.94)	117.33 (373.41)	63.53 (205.40)
Started one-or two-dwel	25.33 (51.43)	43.80 (58.21)	27.83 (48.40)
Price/sqm multi-dwellings	5,423.78 (6,447.20)	12,291.17 (10,400.80)	6,869.66 (5,980.54)
Price/sqm one-or two-dwel	9,732.80 (6,386.87)	18,086.62 (11,765.61)	11,594.95 (6,636.25)
Average income	229.88 (20.52)	263.97 (58.66)	235.60 (23.55)
Tobin's q multi-dwelling	0.24 (0.25)	0.47 (0.34)	0.31 (0.23)
Tobin's q one-or two dwel	0.58 (0.31)	0.95 (0.50)	0.68 (0.31)
Population	17,237.39 (36,313.49)	16,454.98 (36,776.67)	12,793.56 (13,422.62)
Observations	611	579	590
	(4) T-test (2-1)	(5) T-test (3-1)	(6) T-test (3-2)
Multi-dwellings	-1,849.25 [-1.08]	-4,700.21*** [-3.72]	-2,821.84* [-2.28]
One-or Two-dwellings	435.97 [1.24]	-225.25 [-0.69]	-690.27* [-2.36]
Started multi-dwellings	9.93 [0.43]	-44.40* [-2.27]	-54.21*** [-3.32]
Started one-or two-dwel	17.18*** [6.02]	1.73 [0.66]	-15.67*** [-5.79]
Price/sqm multi-dwellings	6,726.00*** [14.03]	1,405.22*** [4.01]	-5,349.52*** [-11.30]
Price/sqm one-or two-dwel	8,032.79*** [15.67]	1,979.05*** [5.55]	-6,102.12*** [-11.56]
Average income	33.08*** [13.46]	5.61*** [4.56]	-27.78*** [-10.87]
Tobin's q multi-dwelling	0.23*** [13.64]	0.07*** [4.90]	-0.16*** [-9.92]
Tobin's q one-or two dwel	0.36*** [15.90]	0.11*** [6.47]	-0.25*** [-10.86]
Population	-1,355.46 [-0.70]	-4,912.14** [-3.21]	-3,556.68* [-2.55]
Observations	1552	1565	1518

For information about variables see Methodology chapter (5.1) or Appendix 1. The means in the table are calculated for the whole observed time period from 2010 to 2017. Municipalities where a shift in power occurred in late 2014 shift group from 2015 onwards as I assume no or a small effect during 2014 as the new government is installed in October.

From the t-tests, I identify some general differences between municipalities voting for the three different political orientations. It can be noted that municipalities with a cross-functional collaboration have a lower residential stock of multi-dwellings on average. Regarding one- or two-dwellings the result indicates that this stock is also lower. It is however only significant when comparing the areas to those with a right-wing local government.

Municipalities which choose a right-wing government have higher average prices. The price per square metre for a multi-dwelling there is more than double on average, compared to a municipality with a left-wing government. Cross-functional collaboration ruling is found in the middle. The same ranking holds when looking at one- or two-dwellings, even though the percentage difference between the three is smaller.

Average income follows the same pattern as the prices. The highest income for individuals between 20 and 64 is found in municipalities with a right-wing political orientation while the lowest are found in areas with a left-winged government. I again find that the municipalities with cross-functional collaborations are in between.

Tobin's Q is a measure of potential profitability of an investment. Comparing multi-dwellings to one- or two-dwellings it can be seen that one- or two-dwellings are in general more attractive for an investment. Comparing the sub-groups it is notable that the municipalities with a right-wing local government again are in the top, followed by the cross-functional collaboration and then those voting for the left-wing. Higher average prices, income and Tobin's Q are all characteristics which are likely to affect the number of constructions positively. Differences in the number of started units between municipalities with a right-wing and a left-wing local government may depend on these.

When studying the number of started housing units I do not find the differences as one might expect from the differences in Tobin's Q and other variables above. There is no significant difference between the number of constructed one- or two-dwellings between municipalities voting for a right-wing and those voting for a left-wing. They are both constructing more than the municipalities with a cross-functional collaboration government on average. Talking about multi-dwellings, the municipalities with no clear political orientation see the lowest amount of started units in absolute values.

I use a regression analysis to investigate the impact of the political orientation of the local government and other variables of interest on the number of constructed housing units. I use the regression in Equation 1 above to perform the analysis. My main interest is the results in column 2 and 4 below, coming from the regressions using period fixed effects. When using period fixed effects the variations come from differences between the different municipalities which is what I aim to look into. The complementary results from the regressions using municipality-individual fixed effects are found in column 1 and 3. When using municipality-individual fixed effects the variations come from changes over time.

TABLE 2

Results from running the regression in Equation 1

Dependent variable	(1) Start multi	(2) Start multi	(3) Start o/t	(4) Start o/t
Right-wing	-0.00801 (-0.05)	-0.0763 (-0.83)	-0.00349 (-0.04)	0.164*** (3.33)
Cross-function	0.254 (1.63)	-0.0290 (-0.33)	0.0148 (0.21)	0.109* (2.45)
Price Multi	0.401 (1.48)	0.426*** (5.01)		
Population	0.00000144 (0.05)	0.0000682*** (9.43)	-0.00000544 (0.24)	-0.0000105*** (-9.57)
Average income	0.0114** (3.16)	-0.00328** (-2.79)	-0.000732** (-0.34)	-0.00329*** (-4.07)
Existing multi	-0.0000135 (-0.62)	-0.0000639*** (-8.63)		
Tobin's q multi	0.689 (1.01)	1.275*** (3.59)		
Price o/t			1.310*** (4.27)	1.939*** (17.52)
Existing o/t			-0.000178*** (-0.16)	0.000130*** (25.60)
Tobin's q o/t			1.263*** (4.42)	-0.708*** (-3.48)
Constant	-2.227 (-1.08)	-0.440*** (-0.65)	-9.897*** (-4.01)	-14.83*** (-4.01)
Year Fixed Effects	No	Yes	No	Yes
Municipality Fixed Effects	Yes	No	Yes	No
Observations	840	840	1682	1682
Adjusted R-square	0.67	0.57	0.84	0.76

T statistics in parentheses
 * p<0.05, ** p<0.01, *** p<0.001

Notes: Numbers in parentheses are standard errors. The regression is run four times. Two times for multi-dwellings, above denoted multi and two times for one- or two-dwellings, above denoted o/t. The results in column (1) and (3) are estimated using municipality-individual fixed effects and the results in column (2) and (4) are estimated using year fixed effects. The number of started dwellings variable and the price variable are logarithms. Information about all variables is found in the Methodology chapter (5.1) or in Appendix 1.

There exist a positive correlation between both right-wing government and a cross-functional government and the number of constructed one- or two-dwellings when including year fixed effects. The effect of a right-wing ruling is slightly larger than the effect of a cross-functional. This indicates that the municipalities with a left-wing local government construct significantly less one- or two dwellings everything else equal. I find no evidence for whether the same holds for multi-dwellings.

Price elasticity of supply of new units is positive for both types of dwellings. The elasticity for multi-dwellings is 0.426 hence, if price increase by 1 percent, the number of started units increase by 0.426 percent. The price elasticity of one- or two-dwellings is higher, if the price of these increases by 1 percent, the amount of started new projects increase by almost the double. If allowing the effect to vary with time, it is slightly lower but still suggests a bigger change in the number of units with a change in price.

An increasing number of households means a positive net migration. Testing for Granger Causality, population causes the number of started construction as well as the opposite which is what I expect. The coefficient is positive when talking about multi-dwellings and negative for one- or two-dwellings. It can be noted that the negative correlation between the existing stock of multi-dwellings and the number of new constructions is of the same size as the positive effect of a new household. The correlation between the existing stock and multi-dwellings is positive if allowing for variations between municipalities while it is negative if allowing for variation with time.

Average income is negatively correlated with the amount of started units both for multi-dwellings and one- or two-dwellings indicating that richer municipalities construct less compare to areas where the average income is lower. The coefficient is of the same size for both types of dwellings. If looking at column 1 and 3 above, it can be noted that the coefficient is positive for multi-dwellings and less negative for one- or two-dwellings when allowing for variations with time.

The correlation between Tobin's Q and the number of constructions is positive for multi-dwellings. If possible profitability increase, then the amount of newly constructed units increase. The same holds for one- or two-dwellings if I include variation over time, see column 3. This means that in time periods with a high Q-ratio, the municipalities are constructing. If I exclude the variations over time I find that the relationship is negative, saying that in municipalities where it is possible to make relatively more profit fewer units of housing are put up.

5.3 Analysis of results from Part 1

Political differences are present when looking at one- or two-dwellings but there are no significant results regarding construction of multi-dwellings. The result that there is no clear difference when looking at multi-dwellings is in line with what Nilsson (2004) finds when he studies the political history as well as what Byggindustrin (2018) finds when studying more recent years. According to theory, since the median voter is the homeowner in most areas, the political direction should not matter since the parties should have the same opinions in order to not lose the election. The result instead indicates that the number of constructed dwellings depends on fundamental factors such as price level, net-migration, average income and the existing stock.

In Table 1, we see that left-wing municipalities have more multi-dwellings than one- or two-dwellings and right-wing municipalities have the largest amount of one- or two-dwellings on average. Since municipalities are more durable than the political orientation of the local government I interpret this as those with a preference for one- or two-dwellings traditionally have been building more of these, than that the parties should have different policies. The office-workers handling the planning- and building permits are not changed with elections as their managers and their preferences cannot be assumed to change with elections either.

Regarding multi-dwellings, the result in column 2, Table 2 is mainly in line with theory. In municipalities experiencing an increase in pricing, construction also increases which is suggested in economic theory as well as the result of the studies made by Boverket (2011) and Caldera and Johansson (2013). The result is consistent with the positive correlation between the Tobin's Q-ratio and the number of constructed units. If possible profit from construction increases then firms will also construct if they are able to. Also, an existing stock means a lower amount of newly constructed units which is also in line with theory.

Municipalities experiencing a positive net-migration construct more multi-dwellings than those experiencing depopulation. The population variable is a bit hard to have a hypothesis about as lack of housing also can result in a lower in-migration as there is nowhere to stay for the newcomers. At the same time, I do consider the variable to account for whether it is attractive to move to a certain municipality. If no one wants to move to a certain area, the government only has to accommodate those already living there, which indicates that no new housing is needed. However, if people want to move to an area, there might be an increase in demand increasing prices as well as a more cramped housing situation indicating that more housing is needed and then also built.

Looking at one- or two-dwellings, the correlation between population and the number of construction is negative which supports what I said above. If there are no one- or two-dwellings to move to, households would probably consider moving to another area.

Municipalities, where inhabitants have relatively higher income, tend to vote for a right-wing ruling rather than a left-wing (see column 4, Table 1). Price per square metre is also higher in these areas, which is not surprising since according to basic economic theory increasing income cause prices to increase. Applying the Homevoter Hypothesis, homeowners are likely to protect their biggest asset and their neighbourhood from construction by affecting politicians. The richer you are, the more expensive house you are able to buy, and the more likely you should be to care for the value of it. If homeowners are overrepresented, higher income is then likely to imply a municipality being more restrictive with planning- and building permits. It is therefore relatively surprising that right-wing local governments allow for more construction of one- or two-dwellings than the left-wing parties indicating that the theory might not fully apply. The reasoning, however, applies to multi-dwellings.

Regarding one- or two-dwellings, the price elasticity of supply is considerably bigger than for multi-dwellings. The estimated number is in between the estimates of Boverket (2011) and Caldera and Johansson (2013). Worth noticing is the negative correlation between Tobin's Q and the construction of new one- or two-dwellings when excluding time variations (see column 4, Table 2). The estimate says, at a significant level, that the bigger possibilities for profits by construction, the fewer units are constructed. It could be that this is because municipalities actually obey for the inhabitants' interest in protecting their assets by not permitting construction. According to theory, on a free and open market

with low entry barriers, this would not be present as firms would run for the opportunity to make a profit. It might be that the thing stopping them is efficient involvement from inhabitants in the politics and the local government being restrictive with planning- and building permits.

Considering that the average Swede is living in a one- or two-dwelling and that the homeowners are overrepresented in 285 out of 290 municipalities I do not find it surprising that constructions are not put up even though it is profitable. A new one- or two-dwelling is more of a substitute to a villa than a multi-dwelling, indicating that the median voter is more positive to building multi-dwellings as it would not affect the price of her own house as much. However, looking at the results of the regression using municipality-individual fixed effects in column 3 suggests that at some point municipalities will build. Meaning, if its profitable enough constructions will be put up.

6. Part 2

In the second part, I investigate whether a shift in power has any effect on the number of started constructions. I separate the municipalities into subsamples and look at them individually as well as if a shift to a certain political orientation has any significant impact on the number of constructed units of housing.

6.1 Methodology and data

To be able to determine the possible effect of a shift in power in 2014 I will use a difference-in-difference method. The logic underlying the model was introduced in the 1850's by the British doctor John Snow and the method is sometimes referred to as a controlled before-and-after study (Columbia University, 2018). The most famous economic experiment is probably the study "Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania" conducted by Card and Krueger in 1994.

The model is used to estimate the effect of a shift in power which is seen as the treatment, hence municipalities experiencing a shift in power are treated and the ones not experiencing a shift in power are the control group. The treatment takes place after the election in 2014 and is assumed to impact the number of constructions from 2015 onwards. This is since the election takes place in late September, with the new municipality government not being installed until later the same year.

After the election in 2014, there was a shift of power in 110 out of 290 municipalities. In summary, slightly over one-third of the municipalities voted for a left-wing or cross-functional government. A bit less than one third ended up voting for a right-wing government (SALAR, 2017). Compared to the results in 2010 the right-wing municipalities decreased from 142 to 82. The left-winged decreased from 110 to 99 and the cross-functional increased to 102. The big number of municipalities not having a clear right- or left-winged ruling makes it harder to estimate whether the political orientation is of

any matter for the amount of constructed housing. Considering that the number of municipalities with a cross-functional cooperation is not small I choose to include them. The coding of a shift in power is done by me by comparing the results of the two elections.

I estimate the regression as follows:

$$\begin{aligned} \text{number of started constructions} = & \beta_0 + \beta_1 * \text{Post Election} + \beta_2 * \text{shift in power} \\ & + \beta_3 * (\text{Post Election} * \text{shift in power}) \end{aligned} \quad (3)$$

β_0 represents the baseline average, β_1 is the time trend in the periods after the election. β_2 denotes the difference between the two groups and β_3 is the difference in the changes between the two groups over time (Verbeek, 2012). Assuming that both groups have the same trend over the total time period studied, we are now able to identify the effect of a shift in power.

The model comes with a few other assumptions saying that there is no spillover effect between individuals, the composition of groups is stable and the trend is parallel in the outcome for both the treated and the control group. Also, the treatment is uncorrelated to the outcome at baseline (Colombia University, 2018).

I use robust standard errors to account for possible autocorrelation between the same municipality before and after the election.

As a complement, I choose to run the regression for different sub-samples. The municipalities can be divided into 7 groups after type and population (see Boverket, 2018 for a full overview). I make sub-samples by the size of the population, attractiveness to invest average income and price per square metre. All the different groups are divided by the 75th percentile, except population which is divided by the 70th. To keep as many observations as possible and keep the estimates efficient I choose to run the groups separately, in other words, I do not use more than one restriction at a time.

I also choose to use the shift to a certain political orientation as a treatment leaving all other as the control group and then run the regression again. This constructs six new groups as there are three political orientations and the two original groups of multi-dwellings and one- or two-dwellings. As a final breakdown, I use the constructed control groups mentioned above to control for whether for example a richer municipality shifting to a left-wing local government experience a different effect than a poorer.

6.2 Result

Table 3

Result from the regression in Equation 3 presenting the effect of a shift in power in the election in 2014 on the number of started multi-dwellings and one- or two-dwellings.

Dependent variable	(1) start multi	(2) start o/t
Shift in power	5.454 (1.02)	0.962 (0.62)
Post Election	49.61*** (3.70)	14.66*** (4.94)
Post Election x shift in power	16.36 (0.81)	-2.320 (-0.61)
Population	0.00558* (2.28)	-0.000163 (-1.44)
Price/sqm multi	0.0166*** (5.18)	
Average income	-0.967*** (-4.68)	-0.273*** (-6.62)
Tobin's q multi	-242.9*** (-3.61)	
Existing multi	0.00305 (1.01)	
Price sqm/ o/t		0.00316*** (5.64)
Tobin's q o/t		-16.59 (-1.54)
Existing o/t		0.00571*** (12.18)
Constant	138.5*** (3.28)	27.22* (3.30)
Observations	1775	1834
Adjusted R-square	0.81	0.64

t statistics in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Multi-dwellings are denoted Multi in the table and one- or two-dwellings are denoted o/t. The dependent variable is the number of started dwellings. Standard errors in parentheses.

The variable of interest is the *Post Election x Shift in power* coefficient, corresponding to β_3 above. The coefficient is the trend difference in the number of constructions after the election in 2014 in the municipalities that experience a shift in power. As can be noted, the coefficients are not significant which means that I find no statistical support for the hypothesis that a shift in power has any effect on the number of constructions.

The Post Election variable indicates the general change in the trend after the election. It can be noted that more one- and two-dwellings as well as more multi-dwellings have been started during this time period compared to the time period before the election. Because of the non-significant result of Shift in Power and Post Election x Shift in Power, this is likely to be because of something other than the election. Possible reasons might be the shift of power in the parliament or a non-political factor such as the favourable economic situation in Sweden.

The results change slightly if I divide the sample into subgroups. When running the regressions with the municipalities separated into the seven different types mentioned above, one *Post Election x Shift in power* coefficient shows significant results. For one- and two-dwellings in greater Gothenburg the difference-in-difference coefficient indicates that a shift in power in the election 2014 increases the number of started constructions by 4.56%.

The following results use a divided sample. I separate the municipalities having a shift in power into three sub-groups, depending on whether they shift to a right-wing, left-wing or cross-functional local government. All of the regressions I mention below are available in Appendix 3. Regressions without significant result are available upon request.

Beginning with the number of started one- and two-dwellings (See Table A3). I find that switching to a left-wing local government decrease the number of constructions compared to the period before. Regarding switching to a right-wing or a cross-functional collaboration, I find no evidence supporting either an increase or a decrease. When looking at the multi-dwellings I find that voting a right-wing government into the local office reduces the number of started constructions (see Table A4), while there are no significant results when studying the other two groups.

I continue to break down the groups. In areas with Tobin's Q below the 70th percentile (See Table A5, A6, A7 & A8) I find significant results that voting for a right-wing ruling lowers the number of started multi-dwellings. Voting for a left-wing local government decrease the number of constructed one- or two-dwellings while voting for a cross-functional collaboration local government increases the number. The results also show that the number of built multi-dwellings increases after a cross-functional collaboration is voted into the office.

If I only look at the 30% biggest municipalities (See Table A9 & A10), sorted by population provides similar results as above. A shift to a right-wing government lowers the number of started multi-dwellings while a new left-wing organisation local government indicates a decrease in the amount of started one- or two-dwellings.

By sorting the sample after price per square metre (See Table A11 & A12), I see that in municipalities below the 75th percentile which switch to a left-wing government the number of started one- or two-dwellings is reduced. The same happens with multi-dwellings if a right-wing government enters the office.

6.2.1 Test of assumptions of the Difference-in-Difference model

I compare municipalities voting for change and those choosing to stay with their current government to be able to identify if there are any differences in the characteristics of the two groups. Table 4 presents means and standard errors, as well as a t-test for the period 2010-2014.

Table 4

A table with means, standard errors (in parentheses) and a t-test of the differences between municipalities voting for change and those keeping their local government in the election in 2014.

	(1) Shift in power	(2) No shift in power	(3) t-test (2-1)
Existing st multi	9,608.75 (35,410.28)	8,059.49 (21,893.91)	-2,038.79 [-1.74]
Existing stock o/t	7,044.86 (6,480.31)	7,146.87 (6,311.11)	94.33 [0.35]
start o/t dwel	82.63 (356.69)	95.87 (308.87)	-38.12* [-2.33]
start multi dw	26.99 (46.57)	34.22 (55.96)	1.25 [0.55]
price multidwel	6,706.59 (6,626.39)	8,721.20 (8,942.38)	507.56 [1.32]
price o/t dwel	11,361.41 (7,053.35)	13,757.69 (10,009.54)	1,549.81*** [3.72]
Tobin's Q multi	0.31 (0.27)	0.35 (0.30)	0.01 [0.65]
Tobin's Q o/t	0.68 (0.35)	0.76 (0.44)	0.07*** [3.88]
Population	16,312.54 (38,580.53)	15,162.55 (27,017.26)	-1,934.30 [-1.42]
Average income	229.97 (21.37)	248.18 (45.61)	8.32*** [4.38]
Observations	534	1241	2320

Looking at the trend I see some results that indicate that it was not the same between the two groups. The result shows that areas with municipalities where the price per square metre of one- or two-dwellings is higher did not want a shift in power. This also holds for the areas where it was more profitable to construct new villas. Also, municipalities with higher average income wanted the incumbent to stay in the office. The three characteristics are the same as the ones discussed to be characteristics of a municipality voting for a right-wing political local government. This could indicate that right-wing governments are more stable, however, I do not evaluate this any further in this study.

6.3 Analysis of results from Part 2

The results from Part 2 support what I find in Part 1. When running the difference-in-difference regression I find no evidence that a shift in power should have any impact on the number of constructions in general. The parties have mainly the same opinions, which according to theory is in order to not lose the election. The question was not of great importance for the inhabitants during the time before the election and neither was it of great importance for the parties which indicate that a change should not lead to any greater differences.

The results I find when breaking down the sample indicates that a shift in general, if any, has a negative impact except in the greater Gothenburg area and in areas with a low Tobin's Q voting for a cross-functional collaboration. I would suggest an analysis on a more local level incorporating more political variables to find out why this differs from other results.

I conclude that shifting to a right-wing government lowers the amount of constructed multi-dwellings while a right-wing local ruling lowers the amount of constructed one- or two-dwellings. Comparing this to the results in Table 1 in Part 1 this supports that different areas have different preferences for both regarding political organisation and different type of housing. If the preferences hold, then it is not unexpected that the amount of construction of the non-preferred dwelling decreases in areas where prices and possible profitability is relatively lower. If it is profitable, then politicians at a certain point allow for construction but if it is not, there might not see a reason for it. This, in turn, is supported by the lack of differences after a shift and between different parties in areas with higher prices and higher possible profitability. The result is also supported by the result from Table 2 that a right-wing organisation in general allows for more one- or two-dwellings.

When analysing the differences between municipalities which vote for a change and those that do not I find that the trend is mainly the same when looking at multi-dwellings. This is one of the conditions for use of the difference-in-difference method. However, I find some differences between the groups when looking at one- or two-dwellings. Areas, where prices are higher than average, tend to stay with their local government to a higher degree. Also, the Tobin's Q ratio for one- or two-dwellings differs in favour for those keeping their government. In Part 1 we also see that these characteristics correspond to an area voting for right-wing government. The trend-differences indicate that the model is not usable when looking at one- or two-dwellings and the results are not a 100% trustable. The fact that the trend differs when talking about one- or two-dwellings should not affect multi-dwellings, I do not, however, find either more or less significant results when looking at the whole sample pointing in any direction when looking at multi-dwellings.

Looking at the other assumptions I find that they are applicable to the sample. The composition of groups is stable as the municipality division has not changed. When talking about if some municipalities experience a higher possibility of a shift in power the result in Table 4 says that this might be true according to the same reasoning as above. For example, municipalities, where the price per square metre of one- and two-dwellings is relatively lower, voted for change.

7. General analysis and discussion

When analysing why there is not enough housing one has to take a few things into account. The baby boom generation from the beginning of the 90s has during the analysed time period moved out of their childhood home, also a bigger immigration took place at the end of 2015. Together with the rapid

urbanisation this puts pressure on bigger cities regarding housing. Housing takes time to construct and it might not be that municipalities are restrictive, but just that it takes time to adjust to an increase in demand.

The question is also, whether the demand shock will persist or not. As Boverket presents in their study from 2011, the amount of construction then was on its long way path. If the record high number of constructions the last years is able to meet the demand shock from both immigration and a big generation growing up, it might be that it still is. I will leave this for future studies to investigate. Municipalities constructing too many will then end up with empty housing in the future, like in the 90s, which in turn means lower tax incomes. They still have to pay the bill in order to construct the area today though and it might be a reason for them to be restrictive.

Historically, political involvement at a national level has been needed, as illustrated by the Million Homes Programme, to get rid of the lack of housing. As other authors have found (see e.g. Cars et al 2013, Bokriskommiten 2014, Bergendahl et al 2015 and Lind 2016) it is likely that other things hinder construction together with the municipality monopoly and it might be that higher involvement is needed again. Politicians at a higher level can be assumed to have a broader perspective and do not have to adjust to inhabitants in a certain municipality to win the election.

Since inhabitants in Sweden are in general owners of a one- or two-dwelling and overrepresented in 285 out of 290 municipalities they represent the median voter as mentioned above. I do see a few signs indicating that municipalities are restrictive with building permits, especially regarding one- or two-dwellings since the correlation between Tobin's Q and the number of constructed units is negative. Using the Homevoter Hypothesis one can explain the restrictive amount of building permit as the local government accommodating the inhabitants' interests.

I consider the results all together to indicate that some municipalities have different characteristics which lead to a certain political orientation of the local government. Looking at areas with a low Tobin's Q, low income or big population where a left-wing government is elected all experience a decrease in construction of one- or two-dwellings. All of these variables together with a larger existing stock of multi-dwellings are also in general characters of a municipality voting for a left-wing government. Assuming it is the municipality that chooses the political orientation rather than the political orientation having any larger impact on the municipality support the result that a change of politicians does not in general have any effect. The assumption is supported by the fact that areas are more durable than the local government. The same holds for characteristics of a right-wing government which in the same areas causes a decrease in multi-dwellings.

The effect of the municipality monopoly is hard to identify. Looking at Örebro is the closest I can come to analyse the effect of more loose regulations. Worth noticing is that the city has the lowest

share of homeowners in the country and the highest amount of constructions in relation to inhabitants. This can be related to Houston, where Kiarie (1996) analysed the effect of abolished regulations and saw housing prices decrease in affected areas as well as people moving away from the city centre. Comparing Örebro to equivalent cities in construction and inhabitants I find no support for that the same has happened in Örebro. For example, the price of multi-dwellings has increased by 87% since 2010 and one- or two-dwellings with 45% in Örebro. Linköping also in the top five regarding construction has experienced about the same increases while Helsingborg, not constructing at equal pace has experienced increases with only 17 and 15 percent respectively for each type of dwelling.

As there are no areas totally without zoning in Sweden it is hard to draw any general conclusions from what is happening in Örebro and there sure might be other reasons for the increase in prices. The homeowner in this area, protecting their biggest asset is underrepresented, and the municipality might, therefore, have fewer incentives to be restrictive. What is the most notable is that more construction does not necessarily have to decrease prices, meaning the homeowners might be worried about nothing and then so might the local government be. At least as long as there is a shortage in the area as well as a positive net-migration pushing demand upwards.

8. Conclusion

So, why are some municipalities able to meet demand at a higher degree than others? Does it matter if one votes another party into the office?

There are many contributing factors which go hand in hand, such as price development, net-migration, and the possible profitability for firms. As one would expect a positive net-migration and bigger possible profits increase the number of multi-dwellings. The same does however not hold for one- or two-dwellings. The fact that an increase in possible profitability does lead to less constructed units might be explained by the overrepresented homeowner, representing the median voter, which the local government has to accommodate. It might also be that the municipalities have different preferences as a right-wing government allows for more construction of one- or two-dwellings and also on average have the biggest existing stock of the same dwelling. This is supported by the results I find regarding a switch of political orientation, saying that if there exists a difference then a left-wing local ruling has a negative impact on the number of one- or two- dwellings while the same holds for a right-wing organisation and multi-dwellings.

Looking at Örebro, which is the closest I can come to a municipality with looser regulations, construction does not necessarily mean lower prices. There are however more factors affecting the number of constructions, such as rent regulations, state interest, demographical and geographical changes which also needs to be added to the analysis to be able to make any general conclusions regarding why some municipalities construct and others do not.

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Appendix

Appendix 1

Table A1: Summary of used variables

Name of variable	Description
Number of started housing	Used as the dependent variable. I use logarithms of collected values. Data is obtained from Statistics Sweden.
Price/sqm	Collected from Kolada, the database of SALAR. Denoted as the average price per square metre. The values are logarithmic. The hypothesis is that there exists positive price elasticity.
Population	Calculated as the number of inhabitants divided by the average number of persons in a household. Both values are obtained from Statistics Sweden. My hypothesis says it can be either a positive correlation or a negative.
Average income	Collected from Statistics Sweden. The coefficient can be both positive and negative.
Tobin's q ratio	Collected from Statistics Sweden and Kolada, calculated as the adjusted market value through the production cost adjusted for quality changes. I do expect the sign of the coefficient to be positive.
Existing stock	A bigger existing stock implies according to economic theory that less housing is constructed, I, therefore, have a hypothesis of a negative coefficient. The numbers are collected from Statistics Sweden.
Right-wing	Dummy taking the value 1 if all of the parties in the local government belong to the Alliance.
Cross-functional collaboration	Dummy. Equal to 1 if the parties in the local government belongs to different political orientations.
Constant	Constant term
e	Error term

Appendix 2

Table A2: Regional divisions used when calculating Tobin's Q.

Region	Included Counties
Greater Stockholm	Stockholm (Municipalities: Huddinge, Nacka, Stockholm, Södertälje, Botkyrka, Haninge, Solna, Järfälla, Sollentuna, Täby, Norrtälje, Lidingö, Tyresö, Sigtuna, Upplands Väsby, Österåker, Sundbyberg, Värmdö, Danderyd, Vallentuna, Nynäshamn, Ekerö, Upplands-Bro, Salem, Vaxholm, and Nykvarn).
Greater Gothenburg	Part of Västra Götaland and Halland (Municipalities: Kungälv, Stenungsund, Tjörn, Öckerö, Göteborg, Mölndal, Partille, Härryda, Lerum, Ale, Alingsås, Lilla Edet, and Kungsbacka).
Greater Malmö	Part of Skåne (Municipalities: Malmö, Lund, Trelleborg, Vellinge, Eslöv, Kävlinge, Staffanstorps, Lomma, Svedala, Burlöv, Höör, and Skurup).
North County Region	Jämtland, Västernorrland, Västerbotten, Norrbotten
Mid-County Region	Uppsala, Södermanlands, Östergötlands, Hallands län (excl. municipalities in Greater Gothenburg), Västra Götalands län (excl. municipalities in Greater Gothenburg), Värmlands, Örebro, Västmanlands, Dalarnas, and Gävleborgs län
South-County Region	Jönköpings, Kronobergs, Kalmar, Gotlands, Blekinge och Skåne län (excl. municipalities in Greater Malmö)

Appendix 3

All tables have t-statistics within parenthesis. The dependent variable is the logarithm of started multi-dwellings or started one- or two-dwellings. I denote multi-dwellings Multi and one- or two-dwellings o/t. The variable of interest is Switch to xxx * Post Election

* p<0.05, ** p<0.01, *** p<0.001

Table A3: Change in constructions of one- or two-dwellings after a shift to left-wing

	Start o/t
Switch to left	0.843*** (28.70)
Post Election	0.0754 (1.60)
Switch to left * Post Election	-0.585*** (-5.04)
Population	-0.0000114*** (-8.83)
Price/sqm	1.803*** (18.73)
Average income	-0.00448*** (-6.45)
Tobin's Q	-0.325 (-1.90)
Existing stock	0.000130*** (23.50)
Constant	-13.72*** (-17.05)
Observations	1682

Table A4: Change in constructions of multi-dwellings after a shift to right-wing

	Start Multi
Switch to right	0.310*** (3.81)
Post Election	0.292*** (3.52)
Switch to right * Post Election	-0.500** (-2.94)
Population	0.0000696*** (9.82)
Price/sqm	0.425*** (4.89)
Average income	-0.00335** (-3.02)
Tobin's Q	1.227*** (3.45)
Existing stock	-0.0000652*** (-9.05)
Constant	-0.397 (-0.58)
Observations	840

Table A5: Change in construction of multi-dwellings after a shift to right-wing in the areas with a Tobin's Q below the 70th percentile.

	Start multi
Switch to right	0.206* (2.38)
Post Election	0.117 (1.02)
Switch to right*Post Election	-0.524** (-3.13)
Population	0.0000138 (0.83)
Price/sqm	0.251 (1.96)
Average income	0.00501 (1.79)
Tobin's Q	1.056 (1.33)
Existing stock	0.0000393 (1.57)
Constant	-0.743 (-0.75)
Observations	474

Table A6: Change in construction of multi-dwellings after a shift to a cross-functional collaboration in the areas with a Tobin's Q below the 70th percentile.

	Start multi
Switch to cross	-0.353*** (-6.38)
Post Election	-0.0640 (-1.01)
Switch to cross*Post Election	0.479*** (4.01)
Population	-0.0000131 (-1.57)
Price/sqm	0.703*** (4.22)
Average income	0.00640*** (4.12)
Tobin's Q	1.358*** (4.84)
Existing stock	0.000151*** (8.39)
Constant	-7.330*** (-6.02)
Observations	1209

Table A7: Change in construction of one- or two-dwellings after a shift to left-wing the areas with a Tobin's Q below the 70th percentile.

	Start o/t
Switch to left	0.892*** (24.69)
Post Election	-0.0520 (-0.87)
Switch to left * Post Election	-0.679*** (-4.28)
Population	-0.0000130 (-1.57)
Price/sqm	0.717*** (4.31)
Average income	0.00611*** (3.97)
Tobin's Q	1.337*** (4.78)
Existing stock	0.000151*** (8.44)
Constant	-7.384*** (-6.08)
Observations	1209

Table A8: Change in construction of one- or two-dwellings after a shift to a cross-functional collaboration excluding the areas with a Tobin's Q above the 70th percentile

	Start o/t
Switch to cross	-0.312*** (-5.05)
Post Election	-0.0449 (-0.66)
Switch to cross*Post Election	0.382** (2.97)
Population	-0.0000379* (-2.55)
Price/sqm	-0.111 (-0.47)
Average income	0.00931*** (5.05)
Tobin's Q	3.554*** (6.72)
Existing stock	0.000182*** (6.71)
Constant	-1.789 (-1.07)
Observations	1054

Table A9: Change in construction of multi-dwellings after a shift to a right-wing if looking only at the 30% biggest municipalities according to population

	Start Multi
Switch to right	0.762*** (4.46)
Post Election	0.366*** (3.86)
Switch to right*Post Election	-0.900*** (-3.33)
Population	0.0000436*** (7.45)
Price/sqm	0.828*** (5.46)
Average income	-0.00740*** (-7.74)
Tobin's Q	1.244** (3.17)
Existing stock	-0.0000397*** (-6.55)
Constant	-2.719* (-2.28)
Observations	588

Table A10: Change in construction of one- or two-dwellings after a shift to a left-wing if looking only at the 30% biggest municipalities according to population

	Start o/t
Switch to left	0.641*** (14.73)
Post Election	0.157** (2.70)
Switch to left*Post Election	-0.290* (-2.27)
Population	-0.00000881*** (-7.37)
Price/sqm	1.954*** (16.66)
Average income	-0.00682*** (-9.64)
Tobin's Q	-0.350 (-1.92)
Existing stock	0.000101*** (15.79)
Constant	-14.23*** (-14.14)
Observations	816

Table A11: Change in construction of one- or two-dwellings after a shift to a left-wing if looking only at areas where the price per square metre is below the 70th percentile.

	Start o/t
Switch to left	0.803*** (20.79)
Post Election	-0.0250 (-0.41)
Switch to left*Post Election	-0.673*** (-4.56)
Population	-0.0000242*** (-3.87)
Price/sqm	0.341 (1.93)
Average income	0.00754*** (4.48)
Tobin's Q	2.339*** (7.11)
Existing stock	0.000158*** (10.51)
Constant	-4.808*** (-3.79)
Observations	1229

Table A12: Change in construction of multi-dwellings after a shift to a right-wing if looking only at areas where the price per square metre is below the 70th percentile.

	Start Multi
Switch to right	0.200* (2.32)
Post Election	0.139 (1.20)
Switch to right*Post Election	-0.574*** (-3.43)
Population	0.0000141 (0.88)
Price/sqm	0.182 (1.56)
Average income	0.00535 (1.84)
Tobin's Q	1.357* (2.13)
Existing stock	0.0000360 (1.53)
Constant	-0.321 (-0.37)
Observations	473