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Tax Policies and Housing Prices: An Empirical Analysis

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Abstract

This thesis evaluates the effect on housing prices from the abolished wealth tax in 2007 and the property tax reform from 2008. This is done using a municipality-level panel dataset, covering all municipalities within Sweden from 2005-2010. In order to estimate if the reforms have increased the prices, a Difference-in-Difference approach is used, using both house prices and apartment prices as an outcome variable. From the theoretical framework, one can expect both reforms to positively affect house and apartment prices. Using house prices as the outcome variable, I find a positive effect in the graphical analysis, and in the regression models. This thesis finds no effects on prices using apartment prices as the outcome variable. Furthermore, I test if the high-income municipalities have benefited more from the reforms. I do not find evidence that high-income municipalities have benefited more from the reforms. This thesis provides a better understanding of how the tax reforms introduced in 2007 and 2008 affected the housing market.

Keywords: Housing prices, Wealth tax, Property tax, Difference-in-Difference

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1. Introduction

The wealth tax and the property tax have been widely debated in Sweden over the last decades, both in the political and academic world. After 12 years of a left-oriented government, the central-right wing parties won the election in 2006. This power shift led to multiple tax reliefs, where the wealth tax was completely removed, and the property tax underwent a great transformation. The 21st century has been an intensive period for the housing market, apartment prices[1] have increased by 85 % and house prices by 49 %, between the years 2004 and 2010 (Svensk Mäklarstatistik, 2023). This rapid increase in prices has led to a high debt ratio for households and a more risky market (SOU 2015:48). This paper will investigate if the tax reforms made after the 2006 election have enhanced the rapid price growth during the 21st century.

The wealth tax was formally removed 1st of January in 2007. In its final form it required households to pay a 1,5% tax rate for wealth above 1,5 million SEK for individuals and 3 million SEK for couples. The property tax underwent a great transformation 1st of January 2008, which significantly decreased the tax burden. However, before the permanent reform, a temporary property tax was introduced 1st of January in 2007, which gave households a major tax relief as well.

This thesis aims to contribute to the understanding of how taxes affect house and apartment prices. This is done by exploiting the tax reforms in 2007 and 2008, as a natural experiment using a dataset constructed by data from Svensk Mäklarstatistik, Statistics Sweden, and The Central Bank of Sweden. The dataset is aggregated on a municipality level and has a panel structure covering the years 2005 to 2010. In order to estimate a causal effect from the reforms a Difference-in-Difference (DiD) approach is used, where the variation in property taxation value in 2007 is used to construct a treatment group that has a larger benefit from the reforms relative to the control group.

[1] In this study I refer to apartments within a tenant owners' association (bostadsrätt).

The objective of this thesis is to empirically evaluate the effect of the removal of the wealth and state property tax on house and apartment prices. This leads to the research question: Did more expensive housing see a greater price increase due to the wealth and property tax reform, relative to more affordable housing?

Previous studies have evaluated the effect of the property tax on house prices e.g., Elinder & Persson (2017). Conversely to their study, which only includes house prices, this study will include an investigation on how the property tax might affect apartment prices as well. Since living in apartments is one of the more common ways of living in Sweden, it is highly relevant in this field to include apartment prices in the analysis (Statistics Sweden, 2021). The dataset used by Elinder & Persson (2017) is micro-level data, while this thesis uses an aggregated dataset and can therefore further develop the understanding of the relationship between house prices and the tax reforms.

This study finds a significant effect on house prices from the 2007-reform using the more basic models. For apartment prices, there is no significant effect on prices from the reforms, which is contradictory to the theoretical framework. When investigating if high-income municipalities have benefitted more from the reforms, I find no effects.

The structure of this thesis is organized in the following way: Chapter 1 has introduced the theme of the thesis and the research question. Chapter 2 presents the institutional setting including information about the tax reforms, the financial crises, and previous research. Chapter 3 introduce the theoretical framework and the hypothesis that will be tested. Chapter 4 presents the data used for the analysis and a detailed description of the empirical strategy. Chapter 5 includes all results and robustness checks. Lastly, in chapter 6 a discussion of the results and a conclusion is provided.

2. Institutional Setting and Literature Review

2.1 The Property Tax

From the 1st of January 2008, the state property tax was replaced, with a municipality property tax. This reform decreased the tax rate from 1% to 0,75% and introduced a cap of 6000 SEK, which made houses above 800,000 SEK face a marginal tax rate of 0%. A potential reform for the property tax was first formally announced by the opposition made up of four conservative/liberal parties known as the alliance. The proposal was divided into two parts, first a temporary tax cut where the taxation values were to be fixed at the 2006 levels, and a cap of 5000 SEK for the land part of the property tax. The second part later stated that the state property tax was to be replaced by a property tax collected by municipalities that were to be lower than its previous form, without any more details about tax rates and potential caps. These statements were to be announced in the common election manifesto presented by the Alliance. After the Alliance's win in the election, the fall of 2006, they formally introduced the first part of the property tax reform, which was implemented on January 1st, 2007. Later in 2007, the final design of the property tax was announced which had a lower tax rate of 0,75% and a cap of 6000 SEK, which was implemented 1st of January 2008 (Elinder & Persson, 2017). Figure 1 illustrates how the different property taxes affected house owners.

For apartment buildings the 2007 temporary stage of the property tax reform was equivalent to houses, i.e., taxation values were fixed at the 2006 levels. As the permanent reform was introduced, the tax rate was reduced from 0,5% to 0,4% with a cap of 1200 SEK per apartment, in a building.

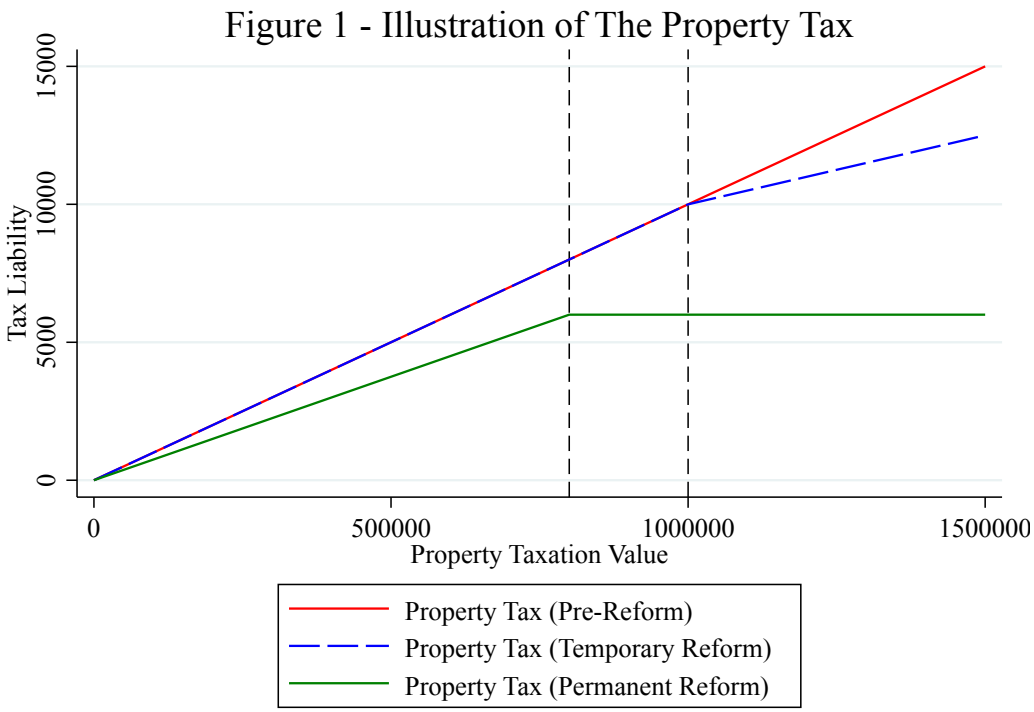

Fig. 1. Illustrates how the different versions of the property tax would affect different property taxation values. Note that for the temporary reform, Figure 1 assumes a property with a land part worth 50% of the total property-taxation value.

2.2 The Wealth Tax

During the early 1990s, the Swedish taxation system underwent a great number of changes including the wealth tax. From being a three-bracket system, with different marginal rates, it became a two-bracket system, with a 0% marginal tax in its lower bracket and 1,5% in the upper bracket. The tax rates for the two brackets remained unchanged until the abolishment of the wealth tax in 2007, however, the threshold for the upper bracket underwent multiple changes. At the introduction of the newly designed wealth tax in 1991, the threshold for paying the wealth tax was 900 000 SEK, both for singles and couples, which led to 7,7% of the population paying a wealth tax. In the final year of existence i.e., 2006, the upper bracket had a threshold of 1,500,000 SEK for singles and 3,000,000 SEK for couples, which led to 3,1% of the population paying the tax (Seim, 2017).

2.3 The Financial Crisis

The financial crisis of 2007-2010 had its origin in the US but spread to financial markets around the world, including Sweden. During this crisis, the Swedish Central Bank began to prepare

policies as the first signs of the crisis appeared in the summer of 2007 (Sveriges Riksbank, 2023). The Swedish Central Bank took several actions that affected the housing market, this includes strengthening liquidity, liquidity support to individual institutions, and loans to neighboring countries. Frisell & Yazdi (2010) discuss how multiple Western countries experienced large declines in house prices, as the financial crises developed. However, the housing market in Sweden was not as affected. Instead, the Swedish housing market experienced a 5% decline in 2008, which were a relatively minor fall compared to similar countries.

2.4 Previous Research

There are multiple papers exploring the effects of house prices from property taxation, both internationally and within Sweden. Borge & Rattsø (2014) investigate the relationship between property taxes and house prices using the Norwegian market. They do so, by exploiting variation in property tax rates, decided by local governments, and they obtain results that indicate full capitalization. Borge & Rattsø's (2014) analysis, implies that municipalities with higher property taxes tend to have higher house prices. Similar results are obtained by Smith & Palmon (1998) who find full capitalization and that the market incorporates future tax liabilities into the house price. These results are obtained by investigating individual house data, in the US.

There are papers investigating the property tax effects within the Swedish market. Elinder and Persson (2017) investigate the property tax reform and its effects on house prices. The paper uses individual sales data from 2006 to 2008 from Svensk Mäklarstatistik. Elinder & Person (2017) use a Difference-in-Difference approach to estimate the effect of the reform. The authors find that for most houses there are no general effects on prices from the removal of the property tax, which is contradictory to the expectations. However, for the most expensive segment of the housing market, there is a positive effect on prices. Elinder & Person (2017) describe this by houses in the expensive segment being in a more exclusive area, the owners of these houses have the largest benefit from the reform, and these owners are more likely to be more financially literate.

As for now, there is a lack of widely recognized research investing the relationship between wealth taxation and house prices. However, the most direct effect of a wealth tax is the reduced disposable income the households face. Multiple papers investigate the determinants of house

prices, where both wealth and disposable income, are strong and common determinants of house prices. Claussen (2012) investigates the development of house prices in Sweden from the mid-80s until 2016. The model finds that house prices have mainly increased by the fundamental factor, after-tax interest rates, disposable income, and household financial wealth.

Bergman, Tangaa Sillemann, & Birch Sørensen (2015) investigate the valuation of the housing market in Demark and Sweden. They define a fundamental house price based on interest rates, disposable income, housing supply, and property taxes. The expected price based on the fundamental price differs from the actual price, multiple times in history. Bergman, Tangaa Sillemann, & Birch Sørensen (2015) find that variables such as short-term interest rates, unemployment, credit growth, and consumer confidence, will influence the gap between the actual price and fundamental price.

3. Theoretical Framework and Hypotheses

3.1 Economic Theory

Olsson (2012) provides a model for the housing market; this model can be modified to theoretically explain the effects of the property tax and wealth tax reform. Within Olsson's (2012) model, the size in square meters of the housing stock is denoted as H, and the price of the housing per square meter is denoted as p^H, hence the price of the property is $p^H H$. Assuming, that households do not repay their mortgages, they must pay $r(p^H H)$ in interest each time period. In addition to the interest, households have a maintenance cost of $\delta(p^H H)$ each time period. Since the property tax is proportional to the price of a house, households need to pay $\tau(p^H H)$, in property tax each time period. The wealth tax is paid in proportional to total wealth, which includes housing, hence household pays $\theta(p^H H)$ and $\theta(z_t + Y_t)$ in wealth tax, where z_t is saving from previous time periods and Y_t is income in period t. Households only spend their income and savings on either consumption or housing, therefore facing the following budget constrain:

$$C + (r + \delta + \tau + \theta)\, p^H H \leq (Y + z_t)(1 - \theta)$$

Identical to the model from Olsson (2012) households only obtain utility from consumption, C or their housing, H. η is the preference towards housing, where in this model $\eta > 0$. This leads to the following utility function.

$$U = \ln C + \eta \ln H$$

Households need to choose, how much housing is optimal, inserting the budget constrain into the utility function, the following is obtained:

$$U = \ln((Y + z_t)(1 - \theta) - (r + \delta + \tau + \theta)\, p^H H) + \eta \ln H$$

To solve for the housing demand, we can take the first order condition:

$$\frac{\partial U}{\partial H} = -\frac{(r + \delta + \tau + \theta)\, p^H}{\left((Y + z_t)(1 - \theta) - \left((r + \delta + \tau + \theta)\, p^H H\right)\right)} + \frac{\eta}{H} = 0$$

And later solve for H:

$$H^d = \frac{n(Y + z_t)(1 - \theta)}{p^H(r + \delta + \tau + \theta)(1 + \eta)}$$

Since housing supply is fixed at H^s in the short term, and $H^d = H^s$ at its equilibrium, the equilibrium price is:

$$p^{H,*} = \frac{\eta(Y + z_t)(1 - \theta)}{H^s(r + \delta + \tau + \theta)(1 + \eta)}$$

As expected, Y and z_t both increase the price of housing, while H^s will have a negative impact on house prices. Both interest and maintenance cost, r and δ, will have a negative impact on prices. Lastly, both the τ and θ will have a negative impact on the prices.

Both the property tax and the wealth tax affected households differently depending on the households' economic situation. For the permanent stage of the property tax before the reform, all households were facing the same τ, paying the tax proportional to its taxation value. After the reform, a lower rate of τ was introduced, with a maximum payment of 6000 SEK. This should lead to lower equilibrium price for all properties, however, houses with a taxation value above 800,000 SEK face a marginal effect of the property tax that is 0 due to the tax-celling, and consequently becomes relatively cheaper compared to the houses below 800,000 SEK, hence the property tax should lower all house prices, with the greatest effect in housing above the 800,000 SEK threshold.

The wealth tax was simply removed, removing θ from the model or lowering it to 0, which would increase prices. However, not all the households paid the wealth tax, only households with wealth above 1,500,000 SEK. Therefore, households below the 1,500,000 SEK threshold, do not need to face any new budget constrain after the reform, since they never paid the tax. However, households above the threshold face the budget constraint without θ. Assuming that households prefer a stable ratio of consumption and housing, there are mostly high-income and high-wealth households, that buy more expensive properties while low-income and low-wealth households, buy the more affordable properties. Hence, leaving the low-priced property market

unchanged, but reducing prices on the more expensive housing market which attracts wealthier buyers.

The potential effect from abolishment of the wealth-tax would affect apartments and houses in an equal way. However, since the property tax affected houses and apartments differently, one can expect the outcome to be different as well. The first stage of the reform froze the taxation values to the 2006 levels, which would imply a rather small tax cut. House owners received an additional benefit by a tax-celling of the land part of a property in contrast to apartment owners. For the 2008 reform, apartment owners experienced a greater tax cut relative to its 2007 version, with an actual decrease in the tax rate, while house owners just received tax cut with a comparable force. However, apartments and houses are likely to be substitute goods, which would imply that both apartment prices and house prices increases, hence a tax cut that only affected house prices, would impact apartment prices as well, which is relevant for the 2007-reform.

3.2 Hypotheses

Based on the previous research and the economic theory it is expected that both the property tax reform and the abolishment of the wealth tax should lead to higher house prices and apartment prices. Due to the structure of the reforms, it is the households that is holding a lot of wealth or expensive housing that benefit the most from the reforms, hence the greatest effect should be seen in more expensive housing. This leads to the hypothesis that: Expensive housing experienced a greater price increase relative to more affordable housing in 2007, due to the first part of the property tax reform, and the abolishment of the wealth tax.

The reforms implemented in 2007 are likely to have the largest effect on housing prices, since both the property tax was reformed, and the wealth tax was abolished. It is empirically difficult to separate these two effects, but since the wealth tax affected a small portion of the population, 3,1% it is likely that the largest part of a potential effect comes from the property tax. There is also an anticipation effect, since the Alliance introduced the first part of the property tax reform, potential homebuyers could expect an even lower tax rate, based on the election promises made by the Alliance. Christofzik, Fuest, & Jessen (2020) have recognized the importance of anticipation effects when investigating taxes.

Besides investigating whether municipalities with higher-valued properties have experienced greater benefits from the reform, I will also investigate whether income has become a more influential factor in determining housing prices following the reforms implemented in 2007. This leads to the hypothesis that: High-income municipalities have experienced greater growth in housing prices after the reform.

In addition to checking the first stage of the property tax reform and the removal of the wealth tax, I will do a robustness check using the 2008-year permanent reform. However, due to the anticipation effects of the 2007 reforms, there should not be an effect in this from the 2008-year reform. As described in an earlier section, the financial crises, were present during these years as well, and are likely to be a confounding effect.

4. Empirical Strategy

4.1 Data

The data utilized for this analysis has been obtained from multiple sources, all variables are aggregated on a municipality level from 2005 to 2010 with monthly observations. The dataset stretches over 6 years, and gives 72 observation points in time, for all municipalities within Sweden i.e., 290. In total, this creates 20,880 observation points.

The first outcome variable, house price is from a dataset provided by Svensk mäklarstatistik and shows the monthly average price per square meter in thousands of SEK for each municipality. Several municipalities are missing sales of houses during certain months, to reduce these observations a moving average of three months is used, after this procedure, 20,116 observations are left. Since house prices are skewed, a logarithmic transformation is done to obtain a more normally distributed outcome variable (Wooldridge, 2012). The distribution after this procedure is presented in Figure A in the Appendix.

The second outcome variable used is apartment price which are from the same dataset as house prices. Apartment prices show the average monthly price per square meter in thousands of SEK of each municipality. Equivalent to house prices, a moving average of three months is used to reduce the number of missing values, after this procedure there are 15,523 observations left. A logarithmic transformation is used for the analysis to obtain a more normally distributed variable (Wooldridge, 2012). The distribution after this procedure is presented in Figure A in the Appendix.

The data on net income is collected by Statistics Sweden (2023) and shows the average yearly net income in thousands of SEK, which is defined as all incomes minus taxes and other negative transfers. Average income is reported yearly on a municipality level and therefore gives 1740 observations. The interest rate is observed from Sveriges Riksbank (2023), it shows the repo rate between the period of 2005 and 2010. Table 1 shows descriptive statistics for all the variables.

Table 1 - Descriptive Statistics

	N	Mean	SD	Max	Min
House price	20,116	11,103	11,103	65,536	536
Apartment price	15,523	7,826	7,826	57,522	106
Interest	72	2.108	2.108	4.750	0.250
Income	1740	191.3	191.3	510.8	141.8

Note: Prices are per square meter, interest is in percent, and income is in thousands SEK.

To determine the control and treatment groups, a dataset from Statistics Sweden (2022) is used and show the average taxation value for each municipality in 2007.

4.1 Empirical Models

From the theoretical framework, one can expect both the wealth and the property tax reforms to increase house prices and apartment prices for the affected households. To estimate the causal effect of the reforms the same empirical model is used. Some of the municipalities are more affected than others due to variations in wealth and house prices. This variation can be exploited with a Difference-in-Difference (DiD) methodology, using specification (1):

$$p_{it} = \alpha + \beta_1 A_i + \beta_2 T_t + \beta_3 (A_i * T_t) + \varepsilon_{it} \quad (1)$$

Where p_{it} is the house prices or apartments prices for municipality i, in period t, A_i is the treatment group dummy for municipality i, which will take the value 1, if the observation is in the treatment group, and 0 if it is in the control group. T_t is the post-reform dummy for year t which will take the value of 1 if the observation is observed after the examined reform. $(A_i * T_t)$ is the interaction variable between the two former dummy variables.

To control for the time trend, $time_t$ is added to the specification. As shown by the theoretical framework, $interest_t$, are a determinant of the house prices, which are added to specification (2)[2].

$$p_{it} = \alpha + \beta_1 A_i + \beta_2 T_t + \beta_3 (A_i * T_t) + \delta_1 time_t + \delta_2 interest_t + \varepsilon_{it} (2)$$

[2] I will estimate multiple variations of specification (2).

When adding interest to the model, one must have the potential endogeneity in mind, which might lead to bias in δ_2 (Wooldridge, 2010). Within this model, a correlation between interest and the error term would likely lead to an overestimation of δ_2, due to the Central Bank of Sweden's combat towards inflation.

The coefficient of interest for all regressions is β_3 and will measure the effect on prices from the property tax and the wealth tax, on the treatment group relative to the control group. β_1 is the initial difference between observations having $A_i = 0$ and $A_i = 1$, or the initial difference between the control group and treatment group. β_2 will measure the marginal effect of T_t or the price development when going from before to after the reform. Hence, β_2 will measure the development of prices for the control group, and $\beta_2 + \beta_3$, measure the price development for the treatment group.

To test if high-income municipalities have experienced greater benefits more from the reform, I will estimate the following specification:

$$p_{it} = \alpha + \beta_1 income_{it} + \beta_2 T_t + \beta_3 (A_i * income_{it}) + \varepsilon_{it} \qquad (3)$$

Where the coefficient of interest is β_3, and will allow for a different linear trend after the reforms. If it is positive and significant, it suggests that income has been a stronger determinant after the reform, relative to before the reform. Similar to the DiD analysis I will add a time trend to model (3) and estimate the following specification:

$$p_{it} = \alpha + \beta_1 income_{it} + \beta_2 T_t + \beta_3 (A_i * income_{it}) + \delta_1 time_t + \varepsilon_{it} \qquad (4)$$

There are likely more variables that will affect house prices within a municipality that are not controlled for in specification (4) such as crime rates or distance to larger cities. These variables stay rather constant in the short term; hence municipality-level fixed effects can be added to control for the unobserved heterogeneity across municipalities that may affect prices. The fixed effect is denoted as φ_i, in model 5, and is a representation of a dummy variable for each municipality (Stock & Watson, 2019). In practice, it is equivalent to estimating a separate

intercept for each municipality, hence removing α from the model. This leads to specification (5):

$$p_{it} = \varphi_i + \beta_1 income_{it} + \beta_2 T_t + \beta_3 (A_i * income_{it}) + \delta_1 time_t + \varepsilon_{it} \qquad (5)$$

4.2 Clustering Standard Errors

As described by Bertrand, Duflo, & Mullainathan (2004) a DiD regression is likely to suffer of serial correlation, which could lead to wrongly estimated standard errors of β_3. This paper discusses three main factors that make serial correlation a central issue in DiD studies. Firstly, there is a long period of time, where in this analysis, municipalities are followed over 36 time periods. Secondly, there is the outcome variables tendency to be serially correlated, which is most likely for house prices and apartment prices. Lastly, there is a lack of variation in the treatment variable, which is $(A_i * T_t)$ in this thesis.

To obtain more reliable standard errors one can cluster the standard errors and allow for residual correlation within each cluster (Pischke & Angrist, 2009). Clustering the standard errors on municipalities would allow for serial correlation within a municipality, which is likely to be a potential problem. The clustered standard errors will be applied to specification 3-5 in addition to DiD regressions.

4.3 Control and Treatment Group

Since the data is on a municipality level, it is not possible to define a treatment group that only includes treated households, and likewise a control group with non-treated households. The treatment is defined as a household that benefits from the tax reform. For the wealth tax this means having wealth over 1,500,000 SEK, and for the property tax it means owning a property with a taxation value over 800,000 SEK. However, due to variation between all municipalities, the treatment and control group can be constructed by how many treated households municipalities include.

Municipalities with an average property taxation value of 800,000 SEK will belong to the treatment group, and those municipalities below will belong to the control group. Wealth is likely higher in these municipalities as well, hence benefiting more from the removal of the wealth tax. The control group consists of 201 municipalities or 69%, while the treatment group

consists of 89 municipalities, or 31%. Figure 1, shows the distribution of average property taxation value for municipalities in 2007, with those in the control group marked in blue, while those in the treatment group marked in red.

In order to ensure that the results do not depend on a specific composition of the treatment and control group, I perform the same analysis with both a slightly higher and a slightly lower threshold in the treatment group.

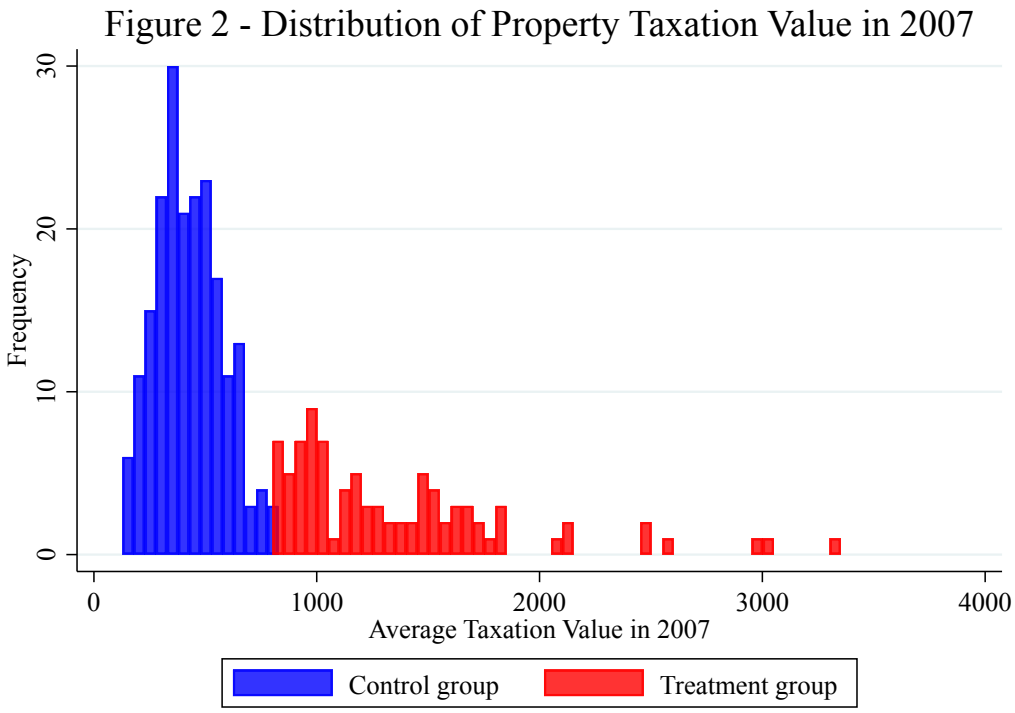

Fig. 2. Shows the distribution of the average taxation value of municipalities in 2007.

4.4 Parallel Trends

The key assumption for the DiD analysis is the parallel trend assumption which is crucial for the effect to be causal. The assumption states that the treatment group would follow the same trend as the control group without intervention. Within this analysis, it means that the price development in the treatment group would follow the same trend as the control group absent of any reform. Since it is not possible to obtain the counterfactual outcome, one must observe the period before the reform, and if the two groups follow a similar trend up to the reform, it is plausible to assume this trend would continue without any intervention (Pischke & Angrist, 2009).

To test if the assumption is reasonable, one can graph the price development for both groups for the periods before the reform, this procedure is presented in Figure 3. As explained by Lechner (2011) and Fredriksson & Magalhães de Oliveira (2019), a placebo reform can be tested in addition to the pre-trend graph. I perform a placebo check for January 2006, and since no actual treatment occurred, I expect no significant difference between the control and treatment groups.

5. Results

5.1 Graphical Results and Parallel Trends

Panel A of Figure 2 shows the average house price development from 2005 to 2010 of the control and treatment groups with the reforms marked with a dashed line in January 2007. As seen in Figure 3 both the treatment group and the control group follow a similar trend which makes it reasonable to believe in the absence of the reform, this trend would likely continue. Panel B shows the identical groups of municipalities, with apartment prices on the y-axis. The trends of these groups indicate that the parallel trend assumption is valid.

Figure 3 - Parallel Trends - 2007 Reforms

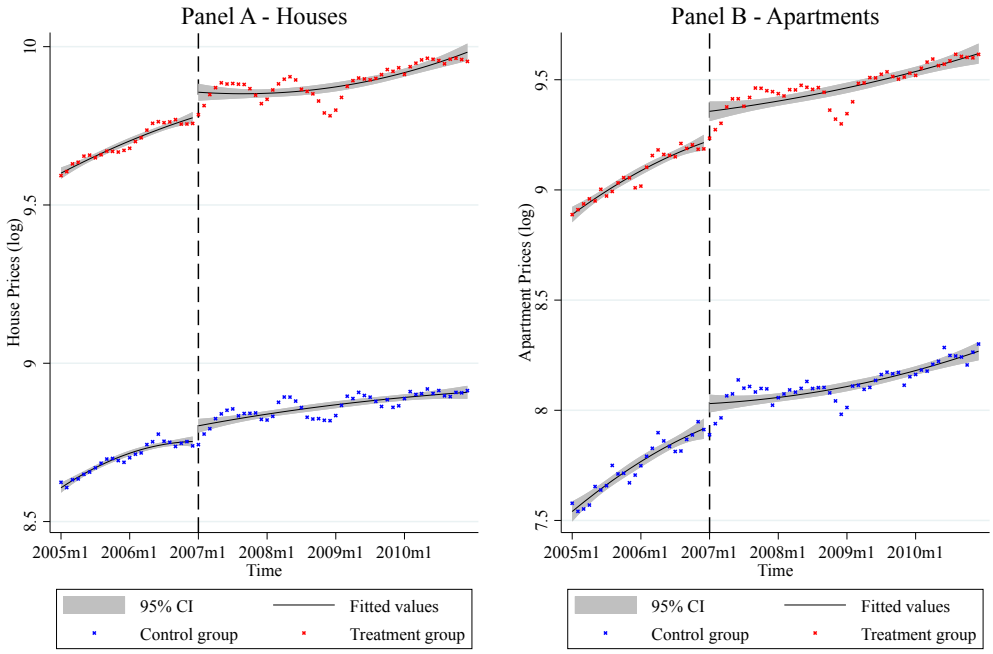

Fig. 2 indicates that the parallel assumption is fulfilled. Panel A shows the average log house prices for the control group and treatment group, respectively over time. The treatment group consists of municipalities with an average taxation value above 800,000 SEK in 2007 and the control group includes municipalities with an average below 800,000 SEK in 2007. Panel B shows the same constructed groups, using log apartment prices instead. The vertical dashed line mark outs the 1st of January 2007 or the first part of the property tax reform, and the removal of the wealth tax. The black line with a grey shaded area the fractional polynomial and its confidence interval.

In addition to checking the parallel trend assumption, Figure 2, gives a glance at the effect on the prices. Panel A's fractional polynomials reveal a break at the point when the 2007-year reforms were introduced, they were indicating a discontinuity that affects both the treatment and control groups. These discontinuities indicate that both the treatment group and control

group have experienced a jump in prices, as the wealth tax and property was reformed 1st of January 2007, which is in line with the economic theory. By comparing the two groups the jump appears to be higher within the treatment groups, which indicates that the treatment group has experienced a greater benefit from the reforms, in line with the theoretical framework. Lastly, looking at the trend after the reform, the treatment group experiences a faster growth compared to the control group.

Focusing on Panel B i.e., apartment prices, there is a discontinuity for both the treatment group and the control group. This indicates that apartment prices have increased both in the control group and the treatment group, after the 2007-reforms. Equivalent to Panel A, the discontinuity appears slightly larger for the treatment group compared to the control group, which is in line with the economic theory. By following the trend after the reforms, both groups have experienced similar growth. The results of Panel A and B indicate the municipalities within the treatment group have experienced a greater benefit from the reforms, in terms of the price of housing.

5.2 Regression Results

Table 2 shows all results for the evaluation of the 2007 tax reforms using house price as the outcome variable. Column 1 is the estimation of model 1 from the empirical strategy and the simplest of all models. Model 1 estimates an intercept of, 8.740 which implies that the average price of houses per square meter is 8.740 in its logarithmic form. The estimation of the treatment dummy is 1.002, which implies that at the initial period treated municipalities had an average house price that was 172 % higher than the control group. The estimation of the post-reform dummy suggests that for the examined time period, house prices have increased by 10 % within the control group.

The main coefficient of interest is positive and significant at a 10%-level, at 0,018 which implies that the house prices increased 1,8% in the treatment group relative to the control form as the first part of property tax reform was introduced, while the wealth tax was abolished.

When adding the time trend to model 2, the estimation of the treatment dummy remains unchanged, and the post-reform dummy decreases in magnitude to 0,068. This is probably because the house prices are being captured in the time trend instead of the post-reform dummy. This leads to an estimate of 0.002, which indicates that house prices grew 0,2% per month on

average for the examined time period. The coefficient of interest remains unchanged at 0,018, and significant at the 10% level. When adding interest, there are no major changes in the estimations, except for the post-reform dummy coefficient which decreases further to, 0,046. The coefficient of interest remains positive and significant, which is in line with the theoretical framework.

From the theoretical framework, it is expected to obtain a β_3 which is significant and positive. This would suggest that municipalities with more expensive houses, and therefore benefits more from the reforms have seen greater growth in house prices. Column 1-3 includes an estimate of β_3 that is positive and significant at the 10% level, in line with the theoretical framework.

Furthermore, Table 2 shows all results for the evaluation of the 2007-year reforms, using apartment prices as the outcome variable. Model 1 estimates a constant of, 7.851, which suggests that the average price of apartments per square meter is 7.851 in its logarithmic form. The estimation of the treatment group dummy is 1.308, which implies that at the initial time period, the treated municipalities had an average apartment price per square meter 269 % higher than the control group. The estimation of the post-reform dummy implies that for the examined time period, apartment prices have increased by 24 % within the control group. The coefficient of interest is statistically insignificant, which indicates that the treatment group has not seen a greater increase in prices relative to the control group.

Adding the time trend to model 2, the estimation of the treatment group dummy remains unchanged, while the estimation of post-reform dummy decreases in magnitude, which is expected when adding the time trend. The coefficient of interest remains insignificant, suggesting that the treatment group has not seen a greater increase in prices relative to the control group.

When, including the control interest its coefficient is estimated to be 0.070 or 7,2% indicating that as the interest increases with one percentage point, apartment prices increase with 7,2%, which is contradictory to the theoretical framework. However, it could be due to the interest rate being endogenous. The estimation of the post-reform dummy becomes negative and significant while the coefficient of interest remains insignificant.

Throughout columns 4-6, β_3, remains insignificant when using apartment price as the outcome variable, which indicates that apartment prices in the treatment group have not seen an increase in prices relative to the control group.

Table 2 - 2007 Reforms – DiD

	(Log) House Price			(Log) Apartment Price		
	(1)	(2)	(3)	(4)	(5)	(6)
A	1.002***	1.002***	1.002***	1.308***	1.308***	1.307***
	(0.038)	(0.038)	(0.038)	(0.080)	(0.080)	(0.080)
T (2007)	0.095***	0.068***	0.046***	0.213***	0.141***	0.083**
	(0.008)	(0.011)	(0.011)	(0.031)	(0.032)	(0.033)
AxT (2007)	0.018*	0.018*	0.018*	0.033	0.033	0.033
	(0.010)	(0.010)	(0.010)	(0.034)	(0.034)	(0.034)
Time		0.001***	0.000		0.004***	0.001
		(0.000)	(0.000)		(0.001)	(0.001)
Interest			0.028***			0.070***
			(0.005)			(0.013)
Constant	8.740***	7.915***	8.473***	7.851***	5.623***	7.031***
	(0.025)	(0.249)	(0.241)	(0.060)	(0.808)	(0.812)
Observations	10,062	10,062	10,062	7,720	7,720	7,720
R-squared	0.632	0.633	0.633	0.480	0.480	0.482
Municipality FE	NO	NO	NO	NO	NO	NO
Control Variables	0	1	2	0	1	2
Standard Errors	Clustered	Clustered	Clustered	Clustered	Clustered	Clustered

Note: Table 2 shows all DiD regressions for the 2007-year reforms for the time period 2006-2008. Column 1 and 4 is the most basic model, only including the dummy variables A, T, and (AxT). Column 2 and 5 includes the Time trend as a control variable, and Column 3 and 6 further adds interest as a control variable. Robust standard errors clustered at the municipality level are in parentheses. * Denotes statistical significance at the 10% level., ** at the 5% level, and * at the 1% level.

5.3 Income Effects

Table 3 presents the findings of the income effects evaluation, in columns 1-3, the analysis is conducted using house price as the dependent variable. As expected, income has a positive effect on house prices, and column 1 indicates that as municipalities increase their average income by 1000 SEK, house prices increase by 1,6%. The estimation of post-reform variable is estimated to be 0,173, which suggests that there has been a general increase in prices by 19% for all municipalities. Lastly, the interaction is estimated to be -0.002, which implies that after the 2007 reforms income has reduced its impact on house prices by 0,002 percentage points, which is opposing to the expectations. Adding the time trend to the model, all

coefficients remain in a similar range, while the time trend is insignificant. For the last model, which includes the municipality fixed effects, income is close to 0 and insignificant since the effects are instead captured in the fixed effects. Furthermore, the coefficient for the post-reform dummy becomes insignificant. Lastly, the interaction is now positive and significant at 0,001, which indicates income has increased its impact by 0,01 percentage point on house prices after the 2007 reforms.

Columns 4-6 is the estimation when using apartment price as the outcome variable and it follows a similar pattern as columns 1-3. In column 4, income is estimated to be 0.019, which indicates that as municipalities increase their average income by 1000 SEK house prices tend to increase by 1,9%. The post-reform dummy is estimated to be 0,302, which indicates that there has been a price increase of 35% of apartments. Lastly, the interaction is estimated to be -0.002, which suggest that after the 2007 reforms income has reduced its impact on apartment prices by 0,002 percentage points, which is contradictory to the expectations. When adding the time trend to the model, there are no major differences in the estimates and the coefficient for the time trend is insignificant. The fixed effects model has an insignificant coefficient for income, which is likely due to these effects being captured in the fixed effects. The coefficient of interest becomes insignificant, which suggest that the income effect on apartment prices is unchanged after the reforms.

Table 3 - 2007 Reform – Income Effects

	(Log) House Price			(Log) Apartment Price		
	(1)	(2)	(3)	(4)	(5)	(6)
Income	0.016***	0.016***	-0.001	0.019***	0.019***	0.002
	(0.003)	(0.003)	(0.001)	(0.004)	(0.004)	(0.003)
T (2007)	0.173**	0.184**	-0.013	0.302**	0.279**	0.262***
	(0.072)	(0.078)	(0.040)	(0.117)	(0.114)	(0.093)
IncomexT (2007)	-0.002***	-0.002***	0.001**	-0.002***	-0.002***	-0.001
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)
Time		-0.001	0.002***		0.001	0.005***
		(0.001)	(0.000)		(0.002)	(0.001)
Constant	6.147***	6.541***	7.868***	4.946***	4.165***	4.547***
	(0.597)	(0.434)	(0.216)	(0.711)	(0.979)	(0.774)
Observations	10,062	10,062	10,062	7,720	7,720	7,720
R-squared	0.503	0.503	0.952	0.305	0.305	0.885
Municipality FE	NO	NO	YES	NO	NO	YES
Control Variables	0	1	1	0	1	1
Standard Errors	Clustered	Clustered	Clustered	Clustered	Clustered	Clustered

Note: Table 3 shows all regressions observing the income effects using (Log) house prices and (Log) apartment prices as the outcome variable for the time period 2006-2008. Column 1 and 4 is the most basic model, only including the variables Income, T, and IncomexT. Column 2 and 5 includes the Time trend as a control variable, and Column 3 and 6 further adds fixed effects. Robust standard errors clustered at the municipality level are in parentheses. * Denotes statistical significance at the 10% level., ** at the 5% level, and * at the 1% level.

5.4 Checking the 2008-Year Reform

Panel A of Figure A (See Appendix) shows the house price development, for the control and treatment group. Both groups follow a similar trend up to the reform, which indicates that the parallel trend assumption is valid. Lastly, Panel B shows the apartment price development for the groups and indicates that the parallel trend assumption is valid.

Table A in the Appendix shows all results for the evaluation of the 2008 reform using house prices as the outcome variable. Column 1, which presents specification 1 from the empirical strategy, estimates a constant of, 8.823 which implies that the average price of houses per square meter is 8.823 in its logarithmic form. The estimation of the treatment group dummy is 1.033 which implies that at the initial period, the treated municipalities had an average house price that was 181 % higher than the control group. The estimation of the post-reform dummy implies that for the examined time period, house prices have increased by 4 % within the control group. For the main coefficient of interest, it is negative and significant at -0.023 which implies

that the house prices fell 2,27% in the treatment group relative to the control form as the property tax was introduced.

When adding the time trend to model 2, the estimation of the post-reform dummy becomes close to 0 and insignificant. The growth seen in house prices is instead captured in the time trend, which is estimated to be 0.002 which implies that house prices grew 0,2% per month on average for the examined time period. When adding interest to the specification, there are no changes in the other coefficients, and the newly added coefficient is insignificant and close to 0, which indicates that interest has not been an important determinant of house prices within this time frame.

Table A shows all results for the evaluation of the 2008-year reform, using apartment prices as the outcome variable. Model 1 estimates a constant of 8.049, which implies that the average price of apartments per square meter is 8.049 in its logarithmic form. The estimation of the treatment group dummy is 1.337 which implies that at the initial time period, the treated municipalities had an average apartment price per square meter 280 % higher than the control group. The estimation of the post-reform dummy implies that for the examined time- period, apartment prices have increased by 5,5 % within the control group. The coefficient of interest is statistically insignificant, which indicates that the treatment group has not seen a greater increase in prices relative to the control group.

Adding the time trend to model 2, β_3 remains insignificant. The estimation of the post-reform dummy becomes insignificant. Equivalent to the analysis using house prices, the price development of apartments is instead controlled for in the time trend.

For column 3, including the control variable interest where its coefficient is estimated to be 0.018 or 1,8% indicating that as the interest increases by one percentage unit, apartment prices increase by 1,8% which is contradictory to the theoretical framework. However, as discussed earlier, the interest rate might be endogenous. The estimation of the post-reform dummy becomes negative and significant, while the coefficient of interest remains insignificant.

When investigating if income has been a stronger determinant of housing prices after the 2008 reform, I find similar results as in the evaluation of the 2007-year reforms (See Appendix Table B). The estimation of the interaction term remains small or insignificant, throughout all

regressions. These results are consistent when using both house prices and apartment prices as the outcome variable.

5.5 Additional Robustness Checks

The robustness checks for the different thresholds for being in the treatment group are presented in Table C and D in the Appendix. Table C presents the results when using a 750,000 SEK threshold for being in the treatment group, by doing so, there are no major changes in the results. Table D presents the results using an 850,000 SEK threshold, and similarly, the results remain robust toward changes in the threshold.

The results of the placebo reform test using 2006, are presented in Table E, in the Appendix. Since there was no actual reform implemented on January 1st, 2006, that is expected to have an impact on housing prices, there should be no significant effect. Looking at the house prices, i.e., columns 1-3, the coefficient of interest remains insignificant though out all models, which is in line with the expectations. Columns 4-6 present the results using apartment prices as the outcome variable, and similarly, there are no significant effects.

6. Discussion

Focusing on the 2007-year reform, significant and positive results are obtained in Figure 2 and all models using house prices as the outcome variable. The results using house price as the outcome variable indicate that house prices have increased in the treatment group relative to the control group. Finding this effect from the reform, are in line with the hypothesis and with previous research from other property tax reforms (Borge & Rattsø, 2014; Smith & Palmon, 1998). However, in contrast to, Elinder & Persson (2017) who only finds an effect in the most expensive segment, I find a more general effect on house prices.

Using apartment prices as the outcome variable, β_3 remains insignificant in all models. This is not in line with the hypothesis that apartment prices in the more expensive municipalities have seen a greater price increase. A potential explanation for this is that the first part of the property tax reform mainly benefited house owners, and the potential effect of apartments and houses being substitutes discussed in section 3, does not appear. The wealth tax was only paid by 3,1% of the population, which may be another reason why the apartment prices within the treatment group does not increase relative to the control group. Another explanation could be that the construction of the treatment group fails to capture the municipalities containing more expensive apartments since the treatment group is constructed using property taxation value for houses.

These results from the 2007-reforms remain robust towards different thresholds for the treatment group, which indicates that the results do not depend on a specific composition of the treatment group. When testing the placebo reform in 2006, I do not obtain any statistically significant effects, which indicates that the parallel trend assumption is fulfilled, which has been graphically demonstrated as well. Furthermore, I find no positive effects from the permanent property tax reform in 2008, on either house prices or apartment prices. These results are in line with the expectations due to the anticipation effects made by election promises.

Looking at the income effects, I find negative estimations of the interaction variable in models 3 and 4, and a positive effect in model 5 when using house prices as the outcome variable. When investigating apartment prices, I obtain negative results in models 3 and 4 and insignificant results in model 5. Throughout all estimations, the effect is small and close to 0, which suggests that high-income municipalities have not benefited more from the reform.

Certain limitations in the methodology and design of the study may account for the absence of the expected effects in some of the results. Using the aggregated dataset, I cannot isolate the treated and non-treated households. Municipalities with a low average will still contain households with high-valued properties, and similarly, municipalities with a high average will contain low-valued properties. However, the significant results remain robust towards changes in the treatment group threshold. Since I use the same treatment group for apartment price analysis, I might fail to capture an effect due to wrongly constructed groups. Furthermore, there are various tax reforms and other events that may affect the housing market, it becomes difficult to evaluate the long-term effects of these reforms, and it is possible that the reforms have had a larger impact in a longer time span.

As mentioned in the introduction, the housing market in Sweden has seen a rapid increase in prices in the last decades, and the prices may be at a non-optimal level. The results in this thesis suggest that the property tax and the wealth tax can have a cooling effect on the houses market which is valuable information for policymakers. Furthermore, the taxes gave a larger tax relief for owners of more expensive houses, in addition, these owners have received a tax windfall in the form of higher-valued properties as a side-effect, which should be taken into consideration.

6.1 Conclusion

This thesis has evaluated how the property tax reform and wealth tax reform from 2007 and 2008 have affected housing prices. Previous research and the theoretical framework suggest that housing prices should increase as a result of these reforms. Taking anticipation effects into account, one can expect the 2007-year reforms to have the largest effect on prices, in contrast to the 2008-year reform, which introduced the permanent and second stage of the property tax reform. I find a significant effect on house prices from the 2007-year reforms, on several of the models using house prices as the outcome variable, which indicates that the treatment group has seen a greater price growth relative to the control group. Using apartment prices as the outcome variable, I find no effect on prices, which indicates that the more expensive apartment has not seen a greater price growth due to the reforms. Observing the income effects, I find no consistent result that suggests that high-income municipalities have benefited more from the reforms.

These results suggest that the more expensive houses have experienced a greater price increase after the 2007 reform, due to the abolishment of the wealth tax and the property tax reform. In contrast, more expensive apartments have not seen a greater price increase relative to the more affordable ones. There are no positive effects from the 2008-year reforms, which are most likely due to the temporary reform being sufficiently extensive in combination with election promises generating anticipation effects. The main contribution of this paper is that I find that municipalities containing higher valued properties has seen a greater price growth. In addition, I include an investigation of the effects on apartment prices, in contrast to previous research of these reforms.

There are multiple papers investigating the relationship between property taxation and housing prices. Further research on the Swedish reforms could investigate the effect on apartments using data over individual sales. This methodology would allow further isolation of the more expensive apartments, and one might find an effect from the reforms.

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Appendix:

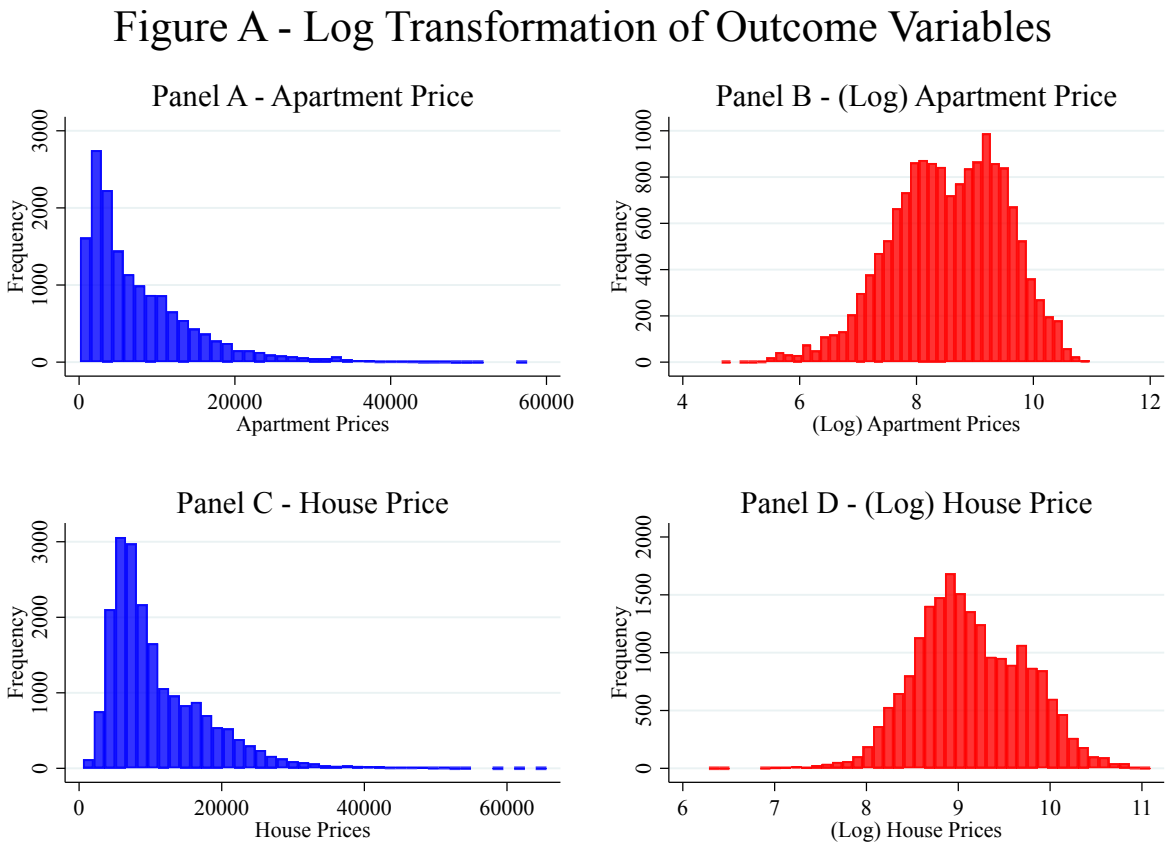

Fig. A. Show the distribution of housing prices, before and after the log transformation.

Figure B - Parallel Trends - 2008 Reform

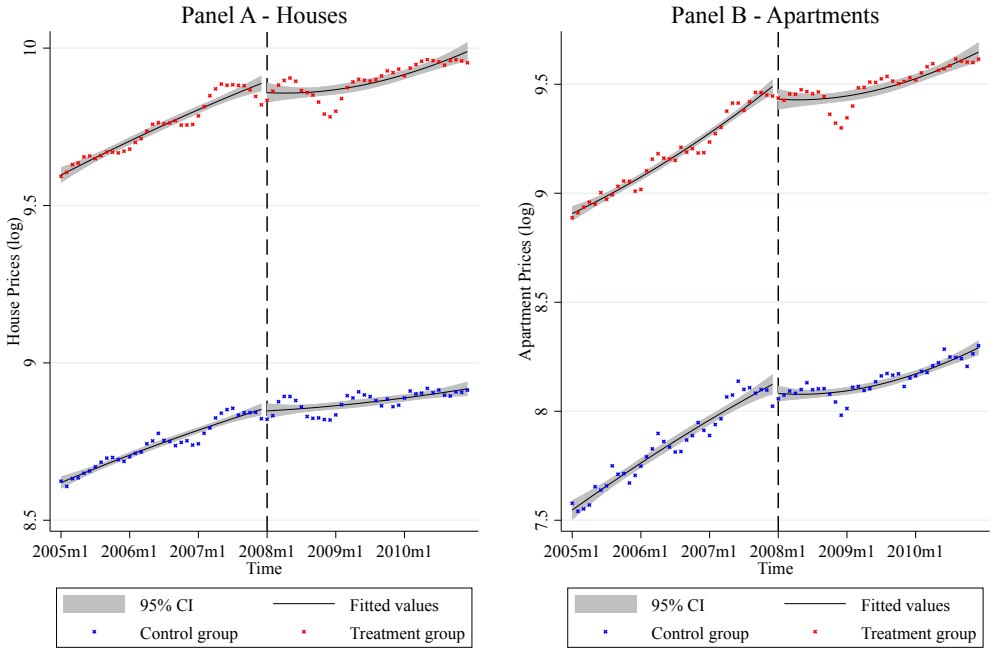

Fig. A indicates that the parallel assumption is fulfilled. Panel A show the average log house prices for the control group and treatment group, respectively over time. The treatment group consist of municipalities with an average taxation value above 800,000 SEK in 2007 and the control group include municipalities with an average below 800,000 SEK in 2007. Panel B show the same constructed groups, using log apartment prices instead. The vertical dashed line mark outs the 1st of January 2008 or the second part of the property tax reform. The black line with a grey shaded area the fractional polynomials and its confidence interval.

Table A – 2008 Reform DiD

	(Log) House Price			(Log) Apartment Price		
	(1)	(2)	(3)	(4)	(5)	(6)
A	1.033***	1.033***	1.033***	1.337***	1.338***	1.338***
	(0.041)	(0.041)	(0.041)	(0.076)	(0.076)	(0.076)
T (2008)	0.041***	0.001	0.001	0.054**	-0.039	-0.083**
	(0.008)	(0.010)	(0.011)	(0.026)	(0.033)	(0.033)
AxT (2008)	-0.023**	-0.023**	-0.023**	0.015	0.015	0.015
	(0.010)	(0.010)	(0.010)	(0.032)	(0.032)	(0.032)
Time		0.002***	0.002***		0.005***	0.009***
		(0.000)	(0.001)		(0.001)	(0.002)
Interest			-0.000			0.018**
			(0.003)			(0.008)
Constant	8.823***	7.564***	7.591***	8.049***	5.111***	2.976***
	(0.026)	(0.235)	(0.371)	(0.057)	(0.709)	(1.129)
Observations	10,108	10,108	10,108	7,895	7,895	7,895
R-squared	0.627	0.627	0.627	0.491	0.492	0.492
Municipality FE	NO	NO	NO	NO	NO	NO
Control Varibles	0	1	2	0	1	2
Standard Errors	Clustered	Clustered	Clustered	Clustered	Clustered	Clustered

Note: Table 2 shows all DiD regressions for the 2008-year reforms for the time period 2007-2009. Column 1 and 4 is the most basic model, only including the dummy variables A, T, and (AxT). Column 2 and 5 includes the Time trend as a control variable, and column 3 and 6 further adds interest as a control variable, Robust standard errors clustered at the municipality level are in parentheses. * Denotes statistical significance at the 10% level., ** at the 5% level, and * at the 1% level.

Table B – 2008 Reform Income Effects

	(Log) House Price			(Log) Apartment Price		
	(1)	(2)	(3)	(4)	(5)	(6)
Income	0.014***	0.014***	-0.000	0.016***	0.016***	0.001
	(0.003)	(0.003)	(0.001)	(0.003)	(0.003)	(0.003)
IncomexT (2008)	0.000	0.000	-0.000**	0.001**	0.001**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Time		0.001	0.003***		0.002*	0.006***
		(0.001)	(0.000)		(0.001)	(0.001)
Constant	6.366***	6.043***	7.243***	5.357***	3.954***	4.342***
	(0.545)	(0.464)	(0.229)	(0.688)	(0.884)	(0.655)
Observations	10,108	10,108	10,108	7,895	7,895	7,895
R-squared	0.516	0.516	0.952	0.316	0.316	0.892
Municipality FE	NO	NO	YES	NO	NO	YES
Control Variables	0	1	1	0	1	1
Standard Errors	Clustered	Clustered	Clustered	Clustered	Clustered	Clustered

Note: Table 3 shows all regressions observing the income effects using (Log) house prices and (Log) apartment prices as the outcome variable for the time period 2007-2009. Column 1 and 4 is the most basic model, only including the variables Income, T, and IncomexT. Column 2 and 5 includes the Time trend as a control variable, and Column 3 and 6 further adds fixed effects. Robust standard errors clustered at the municipality level are in parentheses. * Denotes statistical significance at the 10% level., ** at the 5% level, and * at the 1% level.

Table C - 2007 Reform DiD: Using a Lower Threshold

	House Price			Apartment Price		
	(1)	(2)	(3)	(4)	(5)	(6)
A (Check1)	0.996***	0.996***	0.996***	1.325***	1.325***	1.325***
	(0.038)	(0.038)	(0.038)	(0.079)	(0.079)	(0.079)
T (2007)	0.094***	0.068***	0.045***	0.217***	0.143***	0.086**
	(0.008)	(0.011)	(0.011)	(0.032)	(0.033)	(0.034)
AxT (Check1)	0.018*	0.018*	0.018*	0.025	0.026	0.026
	(0.010)	(0.010)	(0.010)	(0.035)	(0.035)	(0.035)
Time		0.001***	0.000		0.004***	0.001
		(0.000)	(0.000)		(0.001)	(0.001)
Interest			0.028***			0.070***
			(0.004)			(0.013)
Constant	8.724***	7.897***	8.456***	7.812***	5.559***	6.969***
	(0.024)	(0.247)	(0.239)	(0.060)	(0.802)	(0.807)
Observations	10,062	10,062	10,062	7,720	7,720	7,720
R-squared	0.643	0.643	0.644	0.496	0.496	0.497
Municipality FE	NO	NO	NO	NO	NO	NO
Control Variables	0	1	2	0	1	2
Standard Errors	Clustered	Clustered	Clustered	Clustered	Clustered	Clustered

Note: Table C shows all DiD regressions for the 2007-year reforms for the time period 2006-2008, using a lower threshold of 750 000 SEK to be in the treatment group. Column 1 and 4 is the most basic model, only including the dummy variables A, T, and (AxT). Column 2 and 5 includes the Time trend as a control variable, and column 3 and 6 further adds interest as a control variable, Robust standard errors clustered at the municipality level are in parentheses. * Denotes statistical significance at the 10% level., ** at the 5% level, and * at the 1% level

Table D - 2007 Reform DiD: Using a Higher Threshold

	(Log) House Price			(Log) Apartment Price		
	(1)	(2)	(3)	(4)	(5)	(6)
A (Check2)	1.006***	1.006***	1.006***	1.324***	1.324***	1.324***
	(0.039)	(0.039)	(0.039)	(0.078)	(0.078)	(0.078)
T (2007)	0.095***	0.069***	0.046***	0.218***	0.147***	0.090***
	(0.008)	(0.011)	(0.011)	(0.030)	(0.033)	(0.034)
AxT (Check2)	0.018*	0.018*	0.018*	0.020	0.021	0.021
	(0.010)	(0.010)	(0.010)	(0.033)	(0.033)	(0.033)
Time		0.001***	0.000		0.004***	0.001
		(0.000)	(0.000)		(0.001)	(0.001)
Interest			0.027***			0.070***
			(0.005)			(0.013)
Constant	8.764***	7.942***	8.499***	7.887***	5.693***	7.095***
	(0.025)	(0.252)	(0.243)	(0.059)	(0.815)	(0.819)
Observations	10,062	10,062	10,062	7,720	7,720	7,720
R-squared	0.609	0.609	0.610	0.472	0.473	0.474
Municipality FE	NO	NO	NO	NO	NO	NO
Control Variables	0	1	2	0	1	2
Standard Errors	Clustered	Clustered	Clustered	Clustered	Clustered	Clustered

Note: Table D shows all DiD regressions for the 2007-year reforms for the time period 2006-2008, using a higher threshold of 850 000 SEK to be in the treatment group. Column 1 and 4 is the most basic model, only including the dummy variables A, T, and (AxT). Column 2 and 5 includes the Time trend as a control variable, and column 3 and 6 further adds interest as a control variable, Robust standard errors clustered at the municipality level are in parentheses. * Denotes statistical significance at the 10% level., ** at the 5% level, and * at the 1% level

Table E - 2006 Placebo Reform

	House Price			Apartment Price		
	(1)	(2)	(3)	(4)	(5)	(6)
A	1.008***	1.009***	1.009***	1.325***	1.337***	1.337***
	(0.038)	(0.038)	(0.038)	(0.077)	(0.077)	(0.077)
T (Check3)	-0.003	-0.001	-0.007	-0.009	0.004	0.001
	(0.008)	(0.008)	(0.008)	(0.027)	(0.027)	(0.027)
AxT (Check3)	-0.006	-0.007	-0.007	-0.017	-0.029	-0.029
	(0.009)	(0.009)	(0.009)	(0.030)	(0.029)	(0.029)
Time		0.007***	0.008***		0.017***	0.017***
		(0.000)	(0.001)		(0.001)	(0.002)
Interest			-0.015**			-0.010
			(0.008)			(0.025)
Constant	8.744***	4.738***	4.158***	7.859***	-1.375***	-1.771*
	(0.024)	(0.180)	(0.347)	(0.056)	(0.475)	(1.004)
Observations	9,966	9,966	9,966	7,498	7,498	7,498
R-squared	0.631	0.647	0.647	0.453	0.485	0.485
Municipality FE	NO	NO	NO	NO	NO	NO
Control Variables	0	1	2	0	1	2
Standard Errors	Clustered	Clustered	Clustered	Clustered	Clustered	Clustered

Note: Table C shows all DiD regressions for the 2006-year placebo reform for the time period 2005-2007. Column 1 and 4 is the most basic model, only including the dummy variables A, T, and (AxT). Column 2 and 5 includes the Time trend as a control variable, and column 3 and 6 further adds interest as a control variable, Robust standard errors clustered at the municipality level are in parentheses. * Denotes statistical significance at the 10% level., ** at the 5% level, and * at the 1% level