The relation between private real estate investors and real estate value

A Groningen case study

Abstract

Currently the housing market is a highly debated topic all over the world, the Netherlands is no exception to this. There is academic research on the characteristics of secondary property owners or private real estate investors, but little is known about what their presence in the market has on the transaction values of real estate properties. In this study the influence of the private real estate investors on the transaction value is investigated, and in particular within a medium sized student city such as Groningen. Property specific transaction values are analysed and compared, in addition, an aggregated neighbourhood analysis is done. Findings indicate that private real estate investors have a big influence on the transaction values of properties, on average the transaction value of the property is likely to increase by 11% when the property holds a rental license. Additional factors that influence the transaction value are the characteristics of the property itself, such as size and location.

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Table of contents

1 Introduction

In several countries there has been an increase of individuals that own a secondary property next to their primary property, the so called second property owners or investors (Kadi et al., 2020). This growth in investors caused for an increase of inequalities on the housing market (Arundel, 2017), which in turn influenced the amount of homeowners (Hochstenbach et al., 2021). This decline in homeowners leads to non-property owning families having to pay a big share of their income to these investors in order to obtain a place of residence (Wind et al., 2020). The current Dutch housing market is under a lot of stress, prices are rising and starters who want to buy a house can't compete with the current investors on the housing market. There has been an increase of housing prices of 22,1% in 2022 compared to 2021 (CentraalBureauStatistiek, 2022). This is the largest increases in housing prices that we have ever seen in the Netherlands until now, but it is likely that the prices will keep going up for a while. We saw a somewhat similar increase in 2000 of 20,1%, only then the average transaction price of a house was estimated at €160.000,- while in November 2021 the average transaction price was estimated at €400.000,-, this means that the average transaction price has more than doubled over the last 22 years (CentraalBureauStatistiek, 2021). Could this inflation in price have something to do with investors on the real estate market? Private investments on the real estate market have increased tremendously over the past years in Western countries, mainly for the so called 'secondary property ownership' (Wind et al., 2020).

Recently conducted research has taught us about the development of these investors and why there has been a rise in private rental housing. For example the concentration of wealth in these richer households keeps accumulating more and more, because these wealthier households can acquire more and more properties (Arundel, 2017). There are other studies that focus on socio-demographic and economic characteristics of these private landlords (Hochstenbach, 2020), and into what types of housing these private landlords invest, so the characteristics of the acquired properties (Hochstenbach et al., 2021). Furthermore, there are studies that aim to find out the effect of investors on the housing price on a national level (Piazzesi & Schneider, 2009), a large city such as New York, London or Berlin (Fields & Uffer, 2016; Fernandez et al., 2016), but not on a smaller scale industry such as a medium-sized city, with a considerable amount of private investors. These findings on larger scales disregard smaller trends elsewhere, since in the city of Groningen 20% of the entire housing market is occupied by private real estate investors who rent out their property (Hochstenbach et al., 2021).

This paper attempts to reveal the influence private real estate investors have, and focussing particularly on the investors who rent out these properties, on the property sales prices in a smaller area such as a medium sized city. A medium sized city according to the OECD-EC, has an urban centre size with a population between 100.000 and 250.000 (Dijkstra & Poelman, 2012). Since much is known of the why and who about these private investors, but not much is known on what the presence and influence is of these investors on the sales price of properties. The aim of this academic study is: *Do private real estate investors have an influence on the property sales price?* Since it is known why these investors invest in private rental properties but not yet so much what their effects are on the transaction prices of the properties in a medium-sized city. To analyse this, the city of Groningen is used as a case study. First existing academic literature is analysed and compared to find influencing factors on the properties. Following in the methodology the chosen research process is elucidated. Furthermore, in the results section the findings are presented and compared with the existing academic literature and then finally in the conclusion the main research question will be answered.

2 Theoretical framework

2.1 The private rental investment sector

The private rental sector, which is fuelled by investors, has grown significantly over past years and not only in the Netherlands, but also in other very different countries such as: Australia (Hulse & Yates (2017), Iceland, the UK and Spain (Byrne, 2020). The study of Aalbers et al. (2021) analysed by doing a case study on the Dutch housing market that the real estate market has shifted from a single ownership to a more asset class, this means that individuals do not only buy properties of own use, they buy real estate as an investment opportunity. By analysing real estate investment strategies Van Loon & Aalbers (2017) showed in their paper that these investors range from bigger players such as pension funds and housing corporations to smaller scale private investors and parental landlords. All these investors have their own strategies and investments plans, in this paper the focus is on the private real estate investors. To explain the increase in investors the market is differentiated in a demand and supply side.

2.2 The supply side of the private investors

Through a broad literature study of Fernandez & Aalbers (2016) that focussed on the financial globalization they found that there is this big 'wall of money', meaning a big amount of available capital looking for investment opportunities. This large wall of money could potentially impact the housing market. Because with this big stock of capital investors can quickly buy up properties and sell them for profit, impacting the transaction values and influencing the time it takes to sell a house. The study of Fernandez et al. (2016) established by interrogating the geographies of real estate investments that investing in real estate in cities seems to be a low risk option for an investment, because real estate, from an investors viewpoint is observed as 'very liquid'. Which implies that it could be sold again in a short time span with reasonable profits. By examining interviews with housing advocates and analysing secondary data on private equity purchasers, Fields and Uffer (2016), found in their study that investors most often tend to invest in real estate properties because of the expectancy of steady revenues by collecting rent. Besides larger, institutional and private investors, there is an increase of wealthy (mostly older) homeowner using their capital to accumulate more real estate properties to rent out according to the study of Ronald & Kadi (2018) where they analysed the British homeownership society. They analysed the different age groups who possessed multiple properties and concluded that the increase of investments in real estate capital was accompanied by the mostly older homeowners. This increase in investments on the housing market stresses

out the market and could drive up the prices of properties being sold. Especially taken into account the big 'wall of money' the study of Fernandez & Aalbers (2016) discussed. Following these older homeowners, that have accumulated enough wealth to buy property, there are the very rich elites. This group that seem to invest in real estate in major cities across the globe to store their wealth because they see this as a safe option to store their big amounts of capital (Fernandez et al., 2016).

2.3 The demand side of the private investors

Aside from the supply side the demand side also influences the amount of investments in the real estate market. Across the globe there has been a decrease in the amount of homeowners due to the increase of mortgage debt, according to the study of Knoll et al. (2017) the increase of mortgage debt was a result of the increase of housing prices. In their paper a parsimonious model was used to explain changes in house prices. In addition, we observe a decline in new homeowners entering the market, young adults face several difficulties when trying to acquire properties to live in. The young adults have problems getting mortgages due to more restrictions on mortgage credit (Lennartz et al., 2016). Besides the restrictions on mortgage credit, job insecurity and labour market flexibilization result in unstable work contracts (Arundel & Lennartz, 2020). The above mentioned factors make it difficult for starters to enter the housing market, especially when the investors who have the capital and do not need an mortgage out-bid the younger adults. These restrictions and competitors on the housing market further fuel the demand for private rental, thus attracting more investors to invest in properties. These young adults fall according to the study of Aalbers et al. (2021) in between two stools. For the reason that they are not able to get a mortgage due to the labour market flexibilization, and the restrictions on mortgage credit. These young adults have an income that is too high to make them eligible for social housing, but cannot get a mortgage due to the mortgage restrictions. They do however need a place to live, so they shift to the private rental market for housing options (Aalbers et al., 2021), and thus fuelling the demand side for the private rental market. These demand and supply factors all influence the amount of investments in the housing market, which decreases the availability of houses, and therefor increases the price. This results in increased difficulty for starters to enter the housing market, due to the increase in inequality on the market (Arundel, 2017).

2.4 Demographic trends

Besides the supply and forced demand as a result of the current market circumstances, there has also been an increase in demand due to demographic trends (Aalbers et al., 2021). According to extensive literature study and data analysis of Hulse & Yates (2017), where they analysed the composition of demand and supply on the private housing sector between 1996 and 2011, more people prefer to live in costlier inner or middle city locations in cities. To either be closer to their jobs, school, and other amenities cities offer. Besides this the shifts in the life-course of young adults fuels the demand for private renting in the city centres. These younger adults, who most of the time are still attending university, extend this momentary rental period before settling down and attempting to buy a home (Aalbers et al., 2021). This increasing number of individuals in higher education in the city and the ongoing concentration of economic in the city results in an increase in demand for renting in the city. This was studied by Buzar et al. (2005) by analysing trends and patterns in the composition of households in an urban environment. This increase demand due to household compositions and trends results in more investors being attracted to invest in properties.

2.5 Impacts on society

The increase of the private rental sector has varying effects, some positive and some negative. Private investors who buy-to-let could cause gentrification in deprived parts of cities, which enhances the neighbourhood as a whole, and attracts more economic and social activity according to the study of Cocola-Gant & Gago (2021), where they did a mixed method case study by analysing literature on gentrification and doing a fine grained qualitative analysis over a period of 2 years in a neighbourhood in the city of Lisbon. This enhancement of the neighbourhood as analysed by Cocola-Gant & Gago (2021), does lead however to a price inflation. Hence, according to the study of August & Walks (2018), this leads to affordable neighbourhoods now facing a price inflation to such an extent that individuals cannot afford these rises in rent and sales price of properties. They performed a chi square test to analyse the housing market and composition of Toronto and concluded that this price inflation caused for certain families to be pushed out of the neighbourhoods. Next to this, investors with a lot of capital available showed to increase housing prices as well, essentially investors with a lot of capital can drive up market prices by aggressively bidding on the properties (Zhang et al., 2012). This rise in property sales price makes it difficult for starters to enter the market since they

cannot compete with the private investors who as discussed above use their accumulated wealth to invest in additional properties (Aalbers et al., 2021). Thus, the price inflation of properties repulses starters to enter the market, since they cannot compete with the private investors (Conijn et al., 2019). Besides the amount of investors present on the market, the characteristics of the properties and the neighbourhood also influence the price of individual properties, and therefore the average value of properties within a neighbourhood (Cocola-Gant & Gago, 2021; August & Walks, 2018). This influence is visualized in figure 1, the conceptual model. A property which is located geographically more towards the centre of city is valued higher than one on the edge, also the size and number of rooms of the property is a determinant for the price of the property (Zietz et al., 2008). According to the study of Hochstenbach et al. (2020), there is an increase of private investors in for instance a medium sized student cities, mainly due to previously discussed factors like the increase of demand and supply. In their paper they analyse CBS statistics in the Netherlands to chart the social and economic profile of the real estate investors. In order to find patterns in their investment choices. Additionally in another, different study of Hochstenbach et al. (2021), by analysing register data, they empirically unravelled the growth of investors on the real estate market in a medium sized student city. According to their analysis there has been an increase of private landlordism from 2013 to 2018 from 9,6% towards 12,5%. This not only shows the growth of the private rental sector but also its dominance of private investors in a medium sized student city, because almost 20% of the whole housing market in this medium sized student city was used for private renting purposes (Hochstenbach et al., 2021).
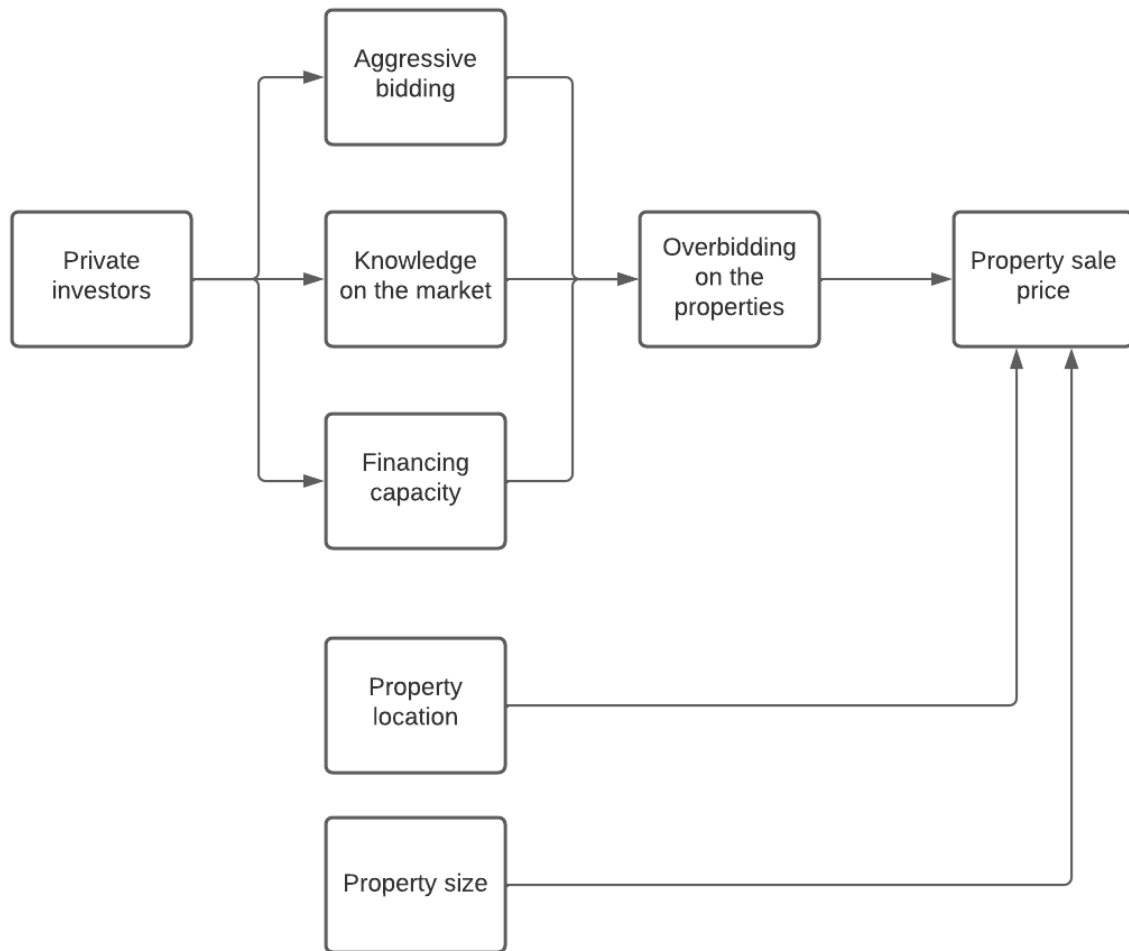
2.6 Conceptual model

Figure 1. *Conceptual model*

The conceptual model in figure 1 aims to visualize the relation between the private real estate investors and the property sales price. The left side of the conceptual model represents the independent variable, the private investors. The right side represents the dependent variable, the property sale price. In between are the *expected* influencers. The three boxes: aggressive bidding, knowledge on the market, and the financing capacity, are the key tools investors possess to overbid on the properties to acquire them. This overbidding will influence the property sale price along with the property characteristics and location.

3 Methodology

3.1 Data collection and cleaning

Data is required to analyse the relationship between private real estate investors and the property values. For this study as mentioned in the introduction above, the city of Groningen will be used as a case study to determine the influence private real estate investors have on property value. In this research secondary data was collected and cleaned to fit the case study at hand. For this particular study the NVM database was accessed, the NVM is with 4400 active real estate agents the largest real estate organization in the Netherlands and is held in high regard amongst real estate agents and researchers. This gives the acquired data through the NVM database credibility and makes it a reliable foundation for this study. To gain insight on the presence of private real estate investors other types of data were required that could not be accumulated through the same data portal. For this the municipality of Groningen was essential in providing the required data. The municipality of Groningen provided a list with several addresses that had a so called "onttrekkingsvergunning", this will be referred to this as a rental license. According to the municipality of Groningen these rental licences are property bound, so if a property holds a rental license and is sold to another party the rental license stays bound to the sold property. For this study the rental licenses are used as an indicator, the rental licenses indicate whether the individual properties are used for investment purposes or not. In order to access and process the data transactions were extracted one by one, and then checked according to the list with rental licenses provided by the municipality of Groningen if it will be used as an investment for renting out rooms or not. These listed transactions of properties with a rental licence will then be compared to properties who do not have these rental licences. In total 117 cases were collected, this consist a mix of properties with, and without the rental licence. Figure 2 on page twelve shows a very equal distribution of the area where properties were selected. Besides the property specific analysis another analysis was performed to back up the findings in the first analysis.

A second analysis on neighbourhood level is conducted for the city of Groningen with aggregated numbers per neighbourhood. The NVM dataset has data available on neighbourhood level, for all municipalities in the Netherlands, the municipality of Groningen is no exception. For this study it is interesting to examine whether the amount of properties used for the private rental sector have an influence on the average WOZ per m2 of the neighbourhoods. In this analysis only the WOZ value per m2 is used instead of the actual

transaction price per m2, which was used in the property specific analysis. The WOZ is used because there is no transaction data available on area specific level, only on property specific level. WOZ value is determined by the municipality, the WOZ value is based on the property characteristics and is used to determine the amount of rent that can be asked, and the amount of taxes needed to be paid on the properties. WOZ value per m2 is used instead of average WOZ to deal with differences in property characteristics amongst the neighbourhoods. By using the WOZ value per m2 we get a better understanding of the impact of properties used for private rental. The NVM database records show that there are 152 "areas" in the municipality. However, not all areas are suitable for this study so some of these neighbourhoods have to be excluded from the analysis. Neighbourhood's such as the area of 'Appeldbergen-Onnen' which is located 16 kilometres outside of the city of Groningen is unsuitable for this case study. The dataset also included areas such as the 'Stadspark' or the 'Noorderplantsoen' which do not have any houses in them at all. These types of neighbourhoods were also taken out of the data set.

The data cleaning resulted in 61 remaining suitable neighbourhoods that could be used for the analysis. To make the NVM data suitable for the analysis, the data had to be converted from absolute numbers into percentages to take into account the differences in size and numbers of each individual area. The percentages were calculated based on the total amount of dwellings present in the neighbourhood. By using percentages there is a relative stock of houses used for private rental which are bought by private investors, this makes the interpretation of the data more valid.

The main research that this study aims to answer is: *what is the relation between private real estate investors and real estate value?* To test this, two multiple linear regressions will be conducted to determine the influence of different variables on a dependent variable. For the property specific analysis the transaction price is the dependent variable, the independent explanatory variables in the property specific analysis are the presence of a rental license, the size of the property in m2, the amount of rooms and the location. The other explanatory variables were chosen since according to literature these variables also influence the value, and therefor transaction price of real estate properties. For this study the main interest is in seeing if the presence of the rental license has an influence on the transaction value. For the neighbourhood analysis multiple variables are implemented that could influence the WOZ value of specific properties. Since according to previously mentioned articles gentrification within neighbourhoods impacts the property values within that neighbourhood. That is why a

variable concerning the construction time of the properties is included, this variable indicates whether the property was constructed before or after the year 2000. Other variables that might cause gentrification is the type of dwelling and how many are present of that type but also the amount of primary schools and shops are taken into account.

Figure 2 shows the areas in which the properties on the property specific level are located. Here it is clearly shown that the data is well spread out and the city is a whole is covered and the cases are not all centred in one area. This map was made based on the addressed extracted from the NVM dataset with the help of GIS software. By visualising the selected areas for the regression analysis it is clear that the city as a whole is covered, and that there is no concentration of cases in one specific part of the city.

Figure 2. *Visual representation of data spread*

3.2 Data analysis

The discussed data in the previous sub chapter was analysed with statistical software to analyse whether there are any significant impact between the variables included. For this study SPSS was used, SPSS is a statistical software program which is able to run a multiple linear regression with these kind of datasets. The author used the acquired knowledge during the bachelor course to perform the statistical analysis and interpret the results. For the first test, which uses property specific data, the dependent variable is price, the independent variables in this analysis are the surface measured in square meters, the number of rooms, the distance to the city centre measured in meters and whether the property holds a license to rent out the multiple rooms in the property, the rental license. For the variable containing the surface of the property this variable was transformed using a log10 transformation. This log10 transformation done on both the surface and the price could then be ran in a separate test to show the relative impact from one variable on another. This log10 transformation was essential for the conclusion to be valid and made sense, since there was quite some variation in size between the properties in the dataset. This made it difficult to interpret the coefficient regarding the change in price towards the change in surface. By using the log transformation this interpretation was more valid. This second analysis was therefor run to compare the log surface with the log price to see the percentage in price change towards an 1 percent increase in surface.

For the neighbourhood analysis of Groningen the dependent variable is the WOZ value per m2. For the independent variables there are 16 control variables, including the amount of properties up for private rental, the amount of dwelling per hectare , when the property was build (before or after the year 2000), what type of houses are present in the area plus the amount of this type that are present in the neighbourhood (detached house etc.), and certain amenities in the neighbourhood that could also influence the value of the properties in the area. For example the amount of properties used for educational purposes (schools). As mentioned before the type of dwellings etc. are presented in percentages to deal with the differences in size and amount of properties in each and every neighbourhood used in the analysis. This makes the interpretation and conclusions more valid.

3.3 Descriptive statistics

This sub chapter shows the descriptive statistics of the analysed data in the result chapter.

Table 1. Property individual descriptive statistics

Property individual descriptive Statistics					
Variable	**N**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Price	117	152500,00	685000,00	308225,56	80344,93606
Surface_m2	117	44	203	86,44	24,742
Number_of_Rooms	117	2	9	3,92	1,240
Distance_centre_m	117	150	3610	1669,23	696,931
Valid N (listwise)	117				

Table 2. Frequency rental license

Rental license Yes No					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	48	41,0	41,0	41,0
	No	69	59,0	59,0	100,0
	Total	117	100,0	100,0	

Table 1 shows the descriptive statistics of the data collected on property individual level. These are transactions done by private individuals. Next to this a frequency table is shown in table 2. The average price of a sold property is €308.225,56, in the introduction it was mentioned that the average transaction price of property was €400.000,00. This shows that amongst the cases in this study the average transaction price was significantly lower than nationwide. The surface in m2 amongst the cases showed quite some variance, that is why another regression analysis was run with the log10 to deal with the big difference amongst the cases, and so that the impact of a relative surface change could be compared with a relative price change. The number of rooms shows the lowest found was 2 and the highest 9, the 2 room apartment is probably a single bedroom apartment and the property with 9 rooms is probably a big student house with multiple bedrooms. The distance to the city centre differs between 150 meters and 3610 meters. This is also one of the reasons why in the neighbourhood analysis areas such as 'Appeldbergen-Onnen' as mentioned previously were taken out. Since they are so far from the centre. Table 2 shows the frequency of the rental licenses. In total 41% of the analysed properties had a licence to rent out rooms, 59% of the cases did not had a rental licence.

Table 3. Descriptive statistics neighbourhood data

Descriptive Statistics					
Variable	**N**	**Min.**	**Max.**	**Mean**	**Std. Deviation**
Dwellings	61	25	4822	1542,79	1173,30
% of dwellings constructed after 2000	61	0	100	22,18	29,62
average WOZ value	61	159300	412500	232852,46	65983,20
WOZ value per m2	61	1290	2890	2191,97	378,597
% private rental	61	3,80%	99,10%	28,47%	17,08%
% detached house	61	0%	38,98%	6,08%	10,95%4
% semi detached	61	0%	66,67%	9,97%	16,74%
% terraced house	61	0%	85,96%	22,87%	18,17%
% farm	61	0%	89,52%	5,74%	15,46%
% upstairs or downstairs apartment	61	0%	62,59%	14,13%	17,29%
% apartments	61	0%	86,11%	37,23%	25,52%
% studio's	61	0%	20,92%	4,36%	5,23%
% other properties	61	0%	35,05%	2,90%	5,16%
properties with a health function	61	0	15	1,79	3,08
industrial properties	61	0	112	12,33	21,70
office buildings	61	0	152	22,31	33,23
properties with logistics function	61	0	37	2,05	5,78
retail properties	61	0	423	28,20	67,68
Properties for education or sport	61	0	21	3,98	4,47
Valid N (list wise)	61				

Table 3 lists the descriptive statistics of the data collected on neighbourhood level here in Groningen of the 61 viable neighbourhoods. This data is on aggregated numbers so not as the previous test on property specific level. The average WOZ value on the neighbourhood level shown in table 3 (€232.852,46) is lower than the average price on the individual property level shown in table 1 (€308.225,56). This could be explained by the fact that the WOZ value is determined by the municipality based on the housing characteristics, and the transaction price is what the individual is willing to pay for the property, which might be higher than the actual value determined by the municipality. Additionally, every neighbourhood in the analysis had some private rental dwelling within its area, with a minimum of 3,8% and a maximum of 99,1%. With the lowest being the Buitenhof and the highest the Friesestraatweg. Which makes sense

since the Buitenhof is an area located just around the edges of the city whereas the Friesestraatweg area is area much more in the centre of the city.

Table 4. Descriptive statistics on dwelling owner type

Descriptive Statistics					
Variable	**N**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
% owner occupied	61	0,90%	91,70%	45,00%	23,35424%
% private rental	61	3,80%	99,10%	28,47%	17,08228%
% owned by corporation	61	0,00%	89,50%	26,53%	23,17840%
Valid N (list wise)	61				

Table 4 lists us that within the selected neighbourhoods on average 45 percent of the people actually owns the property they live in. 55% of the people in the observed neighbourhoods rents their property, either through private rental or through rental via a housing corporation. Amongst the type of dwelling the apartments are on average the most present in the different areas, overall 37,23% of the dwellings in the observed areas consist of apartments as shown in table 3. Other properties that were put in the regression analysis are properties with a retail purposes, think about shops or supermarkets. As can be seen in table 3 the properties with a retail function have the highest mean of 28,3. This means that on average more than 28 shops with a retail purpose were in the analysed neighbourhoods. The two areas with the highest score where the Binnenstad-Zuid (423 retail properties) and the Binnenstad-Noord (291 retail properties), this makes sense because both these areas contain the largest shopping streets of the city of Groningen.

4 Results

In this chapter the results of the regression analyses will be shown, discussed, and compared to the processed literature in the literature review section. The first part includes regression on the property specific level and the second part includes the regression on the neighbourhood level.

4.1 Regression property specific level

This sub chapter presents the regression on the property specific level, first the coefficients table of the non-log transformed variables, following with in the second part the coefficients table with the log transformed data.

Table 5. Coefficients regressions property specific level

Coefficients table property specific level		
Variable	**Coefficient**	**Std. Error**
(Constant)	126860,363***	20044,330
rental_license	36377,174**	10749,169
Number_of_Rooms	14421,966*	6762,223
Distance_centre_m	-18,458*	7,082
Surface_m2	1627,320***	319,819
N = 117, R square= ,577		
*p<0.05, **p<0.01, ***p<0.001		
a. Dependent Variable: Price		

Table 5 shows the coefficients regression on the property specific level with a sample of 117 cases. The R square of ,577 indicates that 57,7% of the variance in the dependent variable is explained by the independent variables. Therefore, 57,7% of the variance in the price of properties is explained by the property size, location, number of rooms and whether there is a rental licence for the property. Furthermore table 5 shows that all the different variables that were put in the regression have a significant influence on the dependent variable price. These findings correspond with the findings of the study of Cocola-Gant and Gago (2021), where they identified that the property characteristics such as size , number of rooms, and the location of the property have an impact on the property value.

The variable concerning whether the property holds a rental license or not has a significance of p<0.01, the p value was 0.001 to be precise. The coefficients of 36377,174 shows that when a property does have a rental licence, the property value will likely increase with €36.377,174. This is quite a substantial amount, since as previously discussed and shown in table 1, the average transaction value amongst the cases is €308.225,56. This would conclude that the transaction price of a property is likely to increase with more than 11% if it holds an

rental licence. This could be caused by the accumulated wealth that these private investors have gathered through the years as discussed by Zhang et al. (2012). This observed price inflation caused by the accumulated wealth would then result in starters being pushed out of the housing market when they try to buy their first house. This is in line with the findings of Aalbers et al. (2021) and Conijn et al. (2019) where they found that inflated prices pushed starters out of entering the housing market. Besides the starters being unable to afford houses on the market this price inflation could also impact existing families being pushed out of their neighbourhoods as the study of August & Walks (2018) concluded.

The variable regarding the number of rooms had a significance of $p<0.05$, and a coefficient of 14421,966. Table 5 displays that if the variable: number of rooms increases with 1, the dependent variable: price (transaction value) will increase with 14421,966. What concludes an increase in the transaction value of €14.421,996. As mentioned earlier together with the surface of the property these findings match the findings of Cocola-Gant and Gago (2021) on the influence of property characteristics on the property value.

The variable that displays the distance that the property is located from the city centre has a significance of 0.01 which results it falling in the category of: $p<0.05$. This variable had a negative coefficient of -18,458. Concluding that when the distance to the city centre in meters increases by 1, the value or transaction price of the property decreases with €18,49-. This finding is in line with the findings of Zietz et al. (2008) where they concluded that properties located more centrally are often valued higher. In addition these findings also gives a value and number to the findings Hulse and Yates (2017) already made, they mentioned in their study that today even more people prefer to live in the highly prized inner centres of cities. These findings presented in table 5 imply that the further the residence is located away from the centre, the more the value of that given property decreases.

To get a good and valid interpretation of the next variable, the surface, another regression was run. Because there was a big variation in the surface between properties, and therefore it would be hard to interpret a change of 1 m2. Since 1 m2 increase on a 50m2 property is much more than a 1m2 increase on a 100 m2 property for example. Therefore, to find the relative size to relative price change both variables (surface and price) were log transformed. The outputs are shown in table 6

Table 6. Coefficient regressions property specific level for log transformed data

Coefficients table property specific level log transformed data		
Variable	**Coefficient**	**Std. Error**
(Constant)	4,519***	,147
rental_license	,053***	,015
Number_of_Rooms	,017	,009
Distance_centre_m	-1,940E-5*	,000
LogSurface	**,469***	**,088**
N = 117, R square= ,577		
*p<0.05, **p<0.01, ***p<0.001		
a. Dependent Variable: LogPrice		

Table 6 presents the regression of the log transformed data, the only independent variable of interest is the bottom variable in bold: LogSurface. The LogSurface is significant with a p value of $p<0.001$, the coefficient of 0,469 tells us that a 1% increase in surface, results in a 0,469% increase in price. This is in line with the findings of both Zietz et al. (2008) and the study of Cocola-Gant and Gago (2021). Where both studies found that property characteristics including the surface of a property has an impact on the sales price.

4.2 Regression neighbourhood level

Table 7. Coefficients regressions neighbourhood level

Coefficients table neighbourhood level		
Variable	**Coefficient**	**Std. Error**
(Constant)	145,558	437,736
Dwelling per hectare	3,852	2,133
% of dwellings constructed after 2000	4,103**	1,252
% private rental	5,832*	2,679
% detached house	27,285*	8,614
% semi detached	13,661**	3,946
% terraced house	13,233*	4,589
% farm	-,156	2,213
% upstairs or downstairs apartment	19,126**	5,363
% apartments	17,450**	4,724
% studio's	23,666*	9,507
% other properties	8,205	8,581
properties with a health function	-6,993	12,315
industrial properties	1,375	1,884
office buildings	1,458	1,784
properties with logistics function	24,823	16,360
retail properties	-2,296	1,544
properties for education or sport	-5,670	10,096
N = 61, R square = ,648		
*p<0.05, **p<0.01, ***p<0.001		
a. Dependent Variable: WOZ value per m2		

Table 7 presents the regression results on the neighbourhood level, the r square of .648 indicates that 64,8% of the variance in the dependent variable is explained by the independent variables that were mentioned previously. All variables that showed to have a significant influence on the dependent variable are marked with one or multiple asterisks. In table 7 we can observe the influence of the specific independent variables on the dependent variable. The variable most interesting for this research in particular is the percentage of private rental. The table displays that the percentage of private rental in the neighbourhood has a significant impact on the dependent variable: WOZ value per m2 with a significance of $p<0.05$. The coefficient of the percentage of private rental is 5,832, which concludes that when the percentage of private rental

in a neighbourhood increases with 1 percent, the WOZ value per m2 of that neighbourhood will increase by €5,832. This is a 0,3% increase when the increase of over 5 euros is compared to the average WOZ value per m2 of the 61 different neighbourhoods. This means that if there are more properties used for private rental and thus meaning there are more investors present in an area, this will drive up the values of the properties.

Besides this increase of WOZ value per m2 it is interesting to note that the variable concerning the construction period of the dwelling showed to also impact the WOZ value per m2. The variable had significance of $p<0.01$ and the coefficient allows us to conclude that when more dwellings are present that are constructed after the year 2000 the WOZ value per m2 goes up. This urban regeneration could influence or be part of the gentrification process in Groningen, since as concluded already by the study of August and Walks (2018), and that of Cocola-Gant and Gago (2021), when a neighbourhood gets more newly build dwellings the value of the neighbourhood as a whole increases. However, the independent variables concerning properties such as shops and supermarkets, that would enhance the gentrification process as well, did not show to have a significant impact on the dependent variable.

5 Conclusion

The focus of this study is the influence of private real estate investors on the property value and market price of dwellings. This was accomplished by doing a literature review and a case study in the city of Groningen. In the city of Groningen the private real estate investors do influence the transaction value(s) of properties.

The most crucial finding of this paper was the influence of the rental license on the transaction value of properties. When a property holds a license to rent out the rooms it is likely that the transaction value of the property increases by €36.377,17-. This shows that when a property can be used for an investment, it is likely to sell for a higher price. This corresponds with the findings in the literature on private investors overbidding and outbidding starters on the housing market. Furthermore, the housing characteristics showed to influence the transaction value and the average WOZ value. The size of the properties has a big influence on the price, when there is a 1% increase in surface, this will result in a 0,469% increase in price. Adding to this that on the neighbourhood scale, the construction year also plays a role, when there is a 1% increase in dwellings constructed after the year 2000, the average WOZ value per m2 of that neighbourhood will increase by 4,103, which is on average an increase of 0.2%. Which could be a process of gentrification. Since newer build dwelling attract wealthier occupants with more capital available which in the end might push out existing less wealthy inhabitants.

To conclude, the transaction value and/or price of real estate properties is influenced by its characteristics, this includes whether the property could be suitable for room rental and is therefore interesting for private real estate investors. So private real estate investors play a big role in the transaction value of properties since they have the knowledge and resources to buy up properties from for example starters on the market. This papers main limitation is the size of the used dataset, this is partly covered by the additional neighbourhood analysis since this includes all dwelling in the city of Groningen, but nevertheless more property individual data would strengthen the conclusions and interpretations done in this paper.

For future research it is advised to overcome the challenges that occurred during this research. Checking the database where the data is extracted in advance is advised, since there was limited amount of data due to the manual one by one picking of the cases. When a proper extraction method of data is implemented the sampling will be less labour intensive and the dataset will be significantly larger. Furthermore, for future research it would be interesting to find out of similar findings are found in a different city with somewhat the same characteristics as the city of Groningen. In addition, this paper had some contradicting findings regarding possible influence of gentrification on the value of properties in the neighbourhoods of Groningen. For future research it would be interesting to dig deeper into this topic in future research. To find out the specific influence and factors of gentrification on the city of Groningen.

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