



Dutch starters: bound to the polders?

An exploratory paper about the location choice of starters

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Abstract

The last years have witnessed a growing interest in the housing perspectives of starters throughout the Netherlands among politicians, policy-makers, journalists and institutions, whose main concern is the housing market. The growing interest derives from an assumed disability of certain municipalities to house starters.

The purpose of this study is to show to what extent the availability of starter homes as a percentage of the total available homes per Dutch municipality had an effect on realized location choices of starters to live in one of the municipalities of the G8 (Amsterdam, Rotterdam, The Hague, Utrecht, Eindhoven, Almere, Tilburg, Groningen) or not.

Various studies indicate that a combination of lifestyle factors, city characteristics, housing characteristics and personal/ family characteristics affect people's location choice. Hence, a few studies estimated the effect of the availability of (starter) homes on the location choice (of starters). The results of this research show that each additional percentage of starter houses increases the odds of a past move of a respondent to the G8. Starters are affected in their location choice by the presence of other starter houses in a municipality.

Keywords: Buyer's housing market, starters, available starter homes, real estate, urbanity level, residential location choice

1. INTRODUCTION

The last years have witnessed a growing interest in the housing perspectives of starters throughout the Netherlands among politicians, policy-makers, journalists and institutions, whose main concern is the housing market. Starters on the housing market are: ‘People who moved from their parents or from a rental house to a condominium for the first time’ (Ministry of Internal Affairs, 2015). The common age of starters on the buyer’s market is in their twenties or early thirties (Weide, 2016). To achieve a successful local and regional economic development it is of fundamental importance that places can attract these starters, who are primarily in their twenties or early thirties (G4, 2017). The growing interest derives from an assumed disability of certain municipalities to house starters (G4, 2017). Starter homes are houses up to a selling price of €200.000,- (MIA, 2015). On a national scale investors, municipalities, real estate agencies, financial institutions and other stakeholders share the opinion that the lack of suiting available homes potentially affects starters in their location choice. Lately, the Dutch government started to explore ways of using policies and the land-use planning system to influence the provision of affordable houses for starters (MIA, 2017).

Understanding the factors that make people move to a specific place stimulated a great deal of debate and empirical studies. Below is shown that multiple (recent) studies focused on researching residential location choices (in general and of specific groups). Preference of a certain house type or the ability of a starter to afford a certain house type are influenced by a couple of characteristics: income, family-status and the age at which they enter the housing market as independent renters or buyers. Regional differences in incomes and housing preferences should also be considered. With the same income, people in The Randstad (the densest area of the Netherlands) can buy or rent a smaller house than elsewhere in the country (Linde, Dieleman & Clark, 1986). Young people are more likely to stay in the region they studied in, when this region is performing well, economically (Venhorst, Van Dijk & Van Wissen, 2010). Carree and Kronenberg (2010) continue on this by writing that large cities, with high average salaries and interesting amenities attract a relatively big amount of starters. The other way around, starters who just graduated seem to be attracted by areas with good career opportunities (Carree & Kronenberg, 2010). Many other factors have influence on the location choice: the presence of universities (Haapanen & Tervo, 2012), the housing costs, accessibility, travel time to the place of employment (Lawton et al, 2013) and the presence of ‘creative people’ (Florida, 2002). Other examples of factors are: the consequences of a

divorce (Mulder & Wagner, 2012), social networks (Karsten, 2007), the impact of education (Sander & Testa, 2009) and the role of amenities (Niedomysl & Hansen, 2009). Frenkel et al. (2013) showed that classical variables like the presence of jobs and economic performance as well as 'creative' variables such as the presence of amenities, education and culture are important variables for the explanation of residential location choices.

Researches considering residential preferences of starters on a national level are scarce in the Netherlands. Van Oort, Weterings and Verlinde (2003) concluded that ICT workers in The Randstad region valued proximity to both city centers and natural areas and that they have a maximum of 45 minutes commute to get to work. It seems that in The Netherlands it is part of the culture to avoid long travel times. People like to live close to work. Therefore, it might be that the potential absence of available houses has more impact on people's location choice in The Netherlands than in other countries. This can be important considering the following research question and main focus of this paper: "To what extent had the availability of starter houses as a percentage of the total available houses per Dutch municipality effect on realized location choices of starters to live in the G8 or not."

This study investigates the realized location choice of starters by applying a discrete choice model. The model represents the realized choices for a move from a Dutch municipality to another Dutch municipality from respondents of three WoON questionnaires (2009, 2012, 2015) held by the Dutch Ministry of Internal Affairs (MIA). In line with the conceptual model of Frenkel et al. (2013) lifestyle factors, city characteristics, household characteristics and personal/ family characteristics will be used to explain the location choice of starters. Hence, the model will also make use of the availability of starter homes per municipality as a determinant of location choice. In other words, this paper tries to indicate if the percentage of available starter homes on a municipality level has influence on a starters location choice. The WoON data includes information about respondents among the Netherlands. Among this information is the year of moving if respondents made a move. Availability is measured by the amount of sold houses per municipality per year, since this is the closest to total availability as could be provided by the Dutch association of real estate brokers and appraisers (NVM). The NVM provided data for each Dutch municipality between 2003 – 2014 about sold houses below € 200.000,- as a percentage of the total sold houses for each of these municipalities. The two datasets will be merged based on the year of moving to a certain municipality and the percentage of starter houses in the same year in the same municipality of interest. The discrete choice model represents whether a starter made a choice in the past to

reside in the G8 (Amsterdam, Rotterdam, The Hague, Utrecht, Eindhoven, Almere, Tilburg, Groningen) or not. The outcomes can help housing policy makers in the G8 to understand if the building of new exclusive homes for starters has a positive effect on their location choice. As stated before, young people are of fundamental importance for economic development of cities.

The remainder of this paper is organized as follows: In section two the theoretical background and the conceptual model and/or empirical approach are described; section three offers a short oversight of the Dutch housing market; In section four the methodical model is explained. In section five the data and the descriptive statistics are described; section six presents the results and section seven presents the conclusion.

2. THEORY

2.1 Theoretical background

Residential location modelling lies at the heart of one of the many big challenges of contemporary social science. More than 50 percent of the world's population live in cities nowadays. The bigger cities in The Netherlands are the centers of economic and cultural activities. Currently, inward migration to cities is increasing while outward migration is decreasing. Some municipalities face the situation of an increasing demand for houses and a shortage of available supply to meet this demand (Evers et al, 2015). Where people live and how they choose their living location are central elements of residential location modelling. Researches and/or studies about residential location choice are often aimed at specific target groups, but regularly use similar sets of variables to explain this decision.

Theories about residential location choice used to be divided between classical utility-oriented conceptualizations and lifestyle-oriented ones. One of the most well-known examples of the latter is Richard Florida's paper about the creative class. The creative class is attracted by talent, bohemian activity, coolness and gay, cultural amenities and recreation (Florida, 2002). These insights were confirmed by other authors like Baum et al. (2007) or Baemisch et al. (2011). According to them, young people are driven by the desire for education, culture and leisure activities. Others criticized these studies for the lack of convincing evidence and the little knowledge of the actual residential preferences. Lawton et al. (2013) eventually showed that classical- and lifestyle factors should be used next to each other to explain location choice. The study of Frenkel et al. (2013) bridged the gap between lifestyle-oriented studies and the classical utility oriented ones. It also highlighted that heterogeneity exists between subgroups in housing preferences in terms of dwelling size, location and homeownership. This heterogeneity relates to activity, lifestyle and socioeconomic factors (Frenkel et al, 2013). The fact that the model of Frenkel et al. (2013) detects this heterogeneity makes that their paper offers a convenient conceptual model to use for research focused on location choice. Explanatory variables can be placed in roughly four different groups: personal and family characteristics, housing characteristics, city characteristics and lifestyle factors.

The studies named below used similar variables that have influence on the residential location choice. Personal and family characteristics include: income, age, education, gender, ethnicity, marital status and household composition. Income, age, education and a partner improve the possibilities of someone on the housing market (Venhorst et al, 2010; Karsten, 2007; Sander & Testa, 2009; Linde et al, 1986; Baemish et al, 2001; Mulder, 2012). Housing characteristics

include the presence of an outside area or garage, the amount of rooms, surface of the living area and the house type. Different (regional) housing submarkets exist, in which houses in one market are no substitutes for the same houses in the other. With the same income, possibilities on the housing market differ per submarket (Haapanen & Tervo, 2012; Visser et al, 2008). City characteristics are scarcity on the housing market and the housing supply. Some will be influenced by classical factors like the housing supply while others will be influenced by amenities, such as presence of other young people (Frenkel et al, 2013; Visser et al, 2008). Visser et al. (2008) state that the location choice in the Netherlands can partly be explained by spatial variation in the house prices. House prices are affected by supply (shortages) and demand (preference of home buyers) and at the same time the house prices affect the supply and demand itself. Lifestyle factors include contact with family and friends, religion and occupation. Occupation has a relationship with income and therefore income also has an effect on the location choice (Baum, 2007; Lawton et al, 2013; Frenkel et al, 2013).

As the following conceptual model shows, living in the G8 is the dependent variable. Other variables are used to explain this location choice. In order to answer the central research question, the relation between the available homes for starters and the location choice has to be examined.

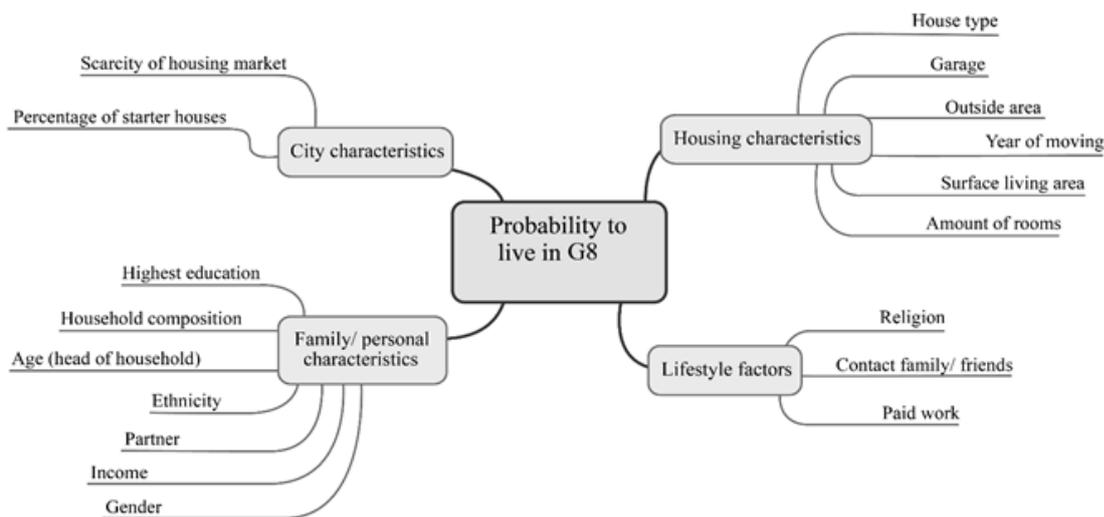


Figure 1. Conceptual model explaining residential location choice. (Living in or moving to the G8).

Source. Venhorst et al, 2010, Karsten, 2007, Sander and Testa, 2009, Linde et al, 1986, Baemish et al, 2001, Mulder, 2012, Haapanen and Tervo, 2012, Visser et al, 2008, Frenkel et al. 2013, Baum, 2007, Lawton et al, 2013.

This theoretical section provided a short overview on the exploring literature research about which factors determine residential location choice. The general findings of this overview lead to a hypothesis that will be tested with help from the discrete choice model. In the next section, this hypothesis will be enhanced. The causality between the main research question

and its answer might seem straightforward based on the current societal debate. However, proving the causality with a scientific approach can add valuable information to the societal discussion.

2.2 Hypothesis

The hypothesis is about the impact of available starter homes on location choice of starters, and is in line with the central research question. Section 1 showed that for example the four biggest Dutch municipalities (Amsterdam, Rotterdam, The Hague & Utrecht or the G4) assume that there's an disability of certain municipalities to house starters. It could also be the case that the assumed disability is exaggerated. Starters have always been a group that faces difficulties when entering the housing market. They are often at the beginning of their work career and they often don't have a house in their possession which they can sell and use to buy a new house. The financial crisis made it easier for starters because housing prices were dropping. In the hypothesis-testing framework there are always two hypotheses; the null hypothesis, denoted as H_0 and the alternative hypothesis H_1 . H_0 is the statement that is actually being tested while H_1 represents the remaining outcomes. Therefore the following hypothesis will be examined:

H_0 : = There's no relationship between the availability of starters homes and the probability for a starter to live in the G8.

H_1 : = There's a relationship between the availability of starters homes and the probability for a starter to live in the G8.

The outcomes of the model, described in section six, will show if the hypothesis can be rejected or not.

3. RESEARCH CONTEXT

3.1 Popularity of cities among young people

The Dutch government is an active player on the housing market, due to several economic (maximization of profits), political (social-liberalism) and societal developments (human rights). The active role is mainly to prevent citizens from poor housing conditions and uncontrolled housing developments, dictated by economic maximalization. The state participates actively on the housing market in (economic) difficult times. It stimulates developers and investors with pre-investments in places where private parties cannot make instant profits. Municipalities determine through their institutional tools, such as zoning plans, what type of buildings can be developed on specific places. They can determine certain demands about new developments. An example is that, for specific locations, developers are obliged to develop 10 percent of the total building surface as social housing. Or requisite that half of the building surface should be used to house starters. These are examples to ensure the policy objectives of many Dutch cities (political parties) to create an ‘undivided city’. This means that different population groups, no matter their income, age, education, origin etc., should not be divided throughout the city in separated neighborhoods (Van Der Cammen, & De Klerk, 2010).

Cities are the centers of economic and cultural activities, partly because of the post-industrial knowledge economy and the importance of face-to-face contacts, physical nearness and agglomeration advantages. The pull-factors of the Dutch cities have grown, which have resulted in an increased inward migration of people from the inland and from abroad. At the same time, the push-factors of the cities have weakened. Migration outward the cities, especially of young families, decreased (Evers et al, 2015). Until the beginning of the 21st century, more people moved out of the Dutch bigger cities than in. Currently, it is the other way around. The inwards migration into the cities consists for more than 50 percent of people between the age of 18 and 25. The inward stream of (young) people is not strange in a historic perspective, since cities are traditionally hubs of commerce, employment, higher education, and amenities. However, an increase in this inwards migration is noticed, caused by a bigger share of young people participating in higher education (Evers et al, 2015).

Municipalities are: Amsterdam, Rotterdam, The Hague, Utrecht, Eindhoven and Groningen.

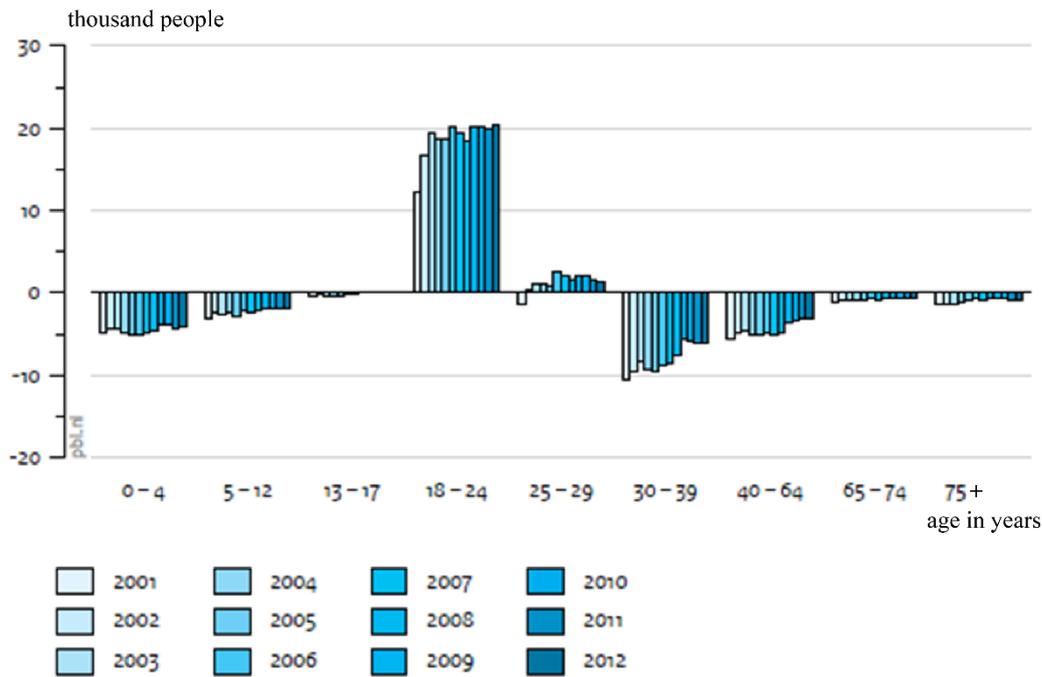


Figure 2. Migration rate in six municipalities in age categories.

Source: Evers, D. Tennekes, J. & Dongen, F. van (2015).

Young people who came to the city for work or education often currently decide to stay in the city without leaving again. Until the end of the last century they often moved out of the bigger cities after finishing school or when they started a family. Several reasons can be found for the longer duration of their stay in the city: the transition stage of a young adult into an adult takes more time; the cities have become more attractive in terms of places to live since the end of the eighties; they have become safer, cleaner and more accessible; the quality of the house stock, public space and amenities has increased (Evers et al, 2015).

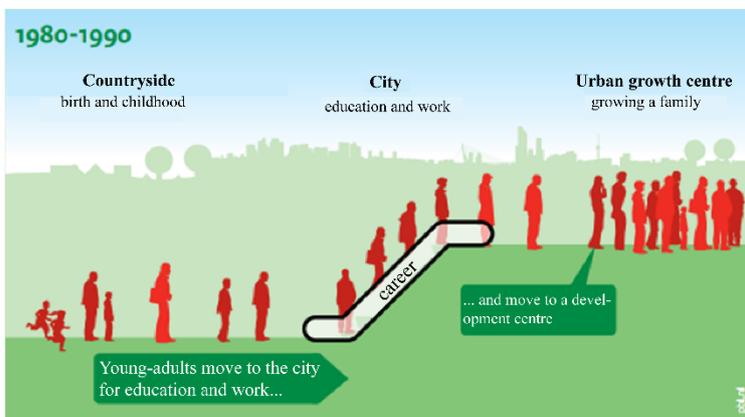


Figure 3a. Urban Region as an escalator. (1980 - 1990)

Source: Evers, D. Tennekes, J. & Dongen, F. van (2015).

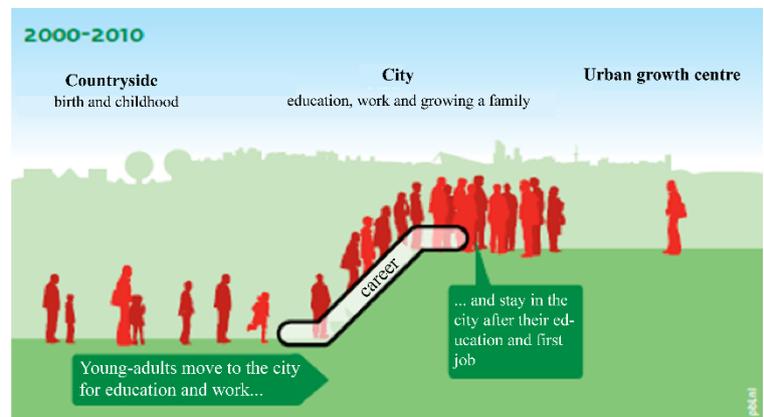


Figure 3b. Urban Region as an escalator. (2000 - 2010)

The city has become especially more attractive for double-income couples and high-educated families. The nearby presence of amenities and jobs makes it easier to take care of children in combination with a dual career (Evers et al, 2015). Two other, more conjectural, causes are the financial worldwide crises and a higher average graduation age. They both had/ have influence on the financial position of these young adults and therefore on a decrease in moving mobility on local and regional housing markets. Next to this, the financial crises also caused a stagnation in the production of newly build houses in the cities (Evers et al 2015).

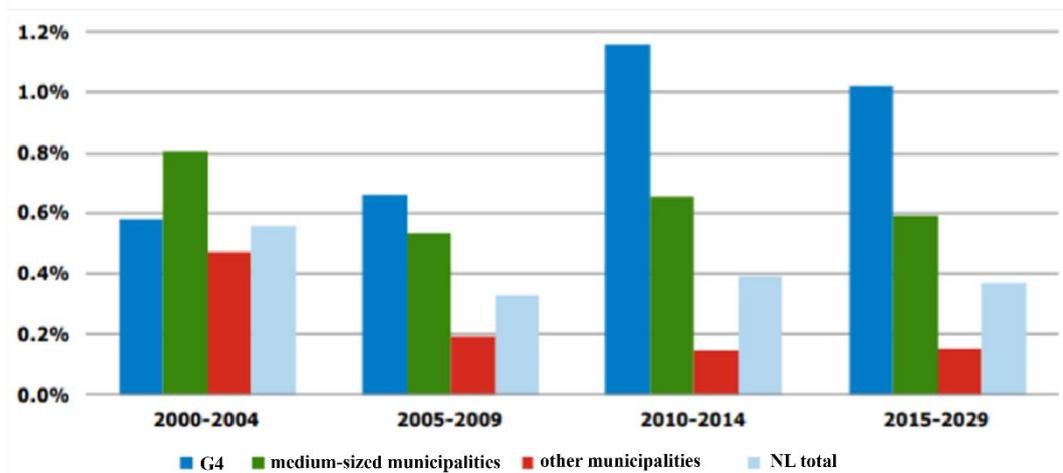


Figure 4. Annual population growth by region

Source. Ministerie van Buitenlandse Zaken (2017).

Young people contribute to the welfare in an (urban) area, in a positive way. A continuous inwards flow of young people can result in an economic renewal with start-ups, innovation and with an addition of talent into the labor force. At the same time, this inwards flow causes new social and urban planning questions. In powerful urban regions with a tight local and regional housing market, one of these questions would be: “where to build, for who and how much” (Evers et al, 2015). The stagnation in building new houses creates rising housing prices and a selective outflow of households with middle and lower incomes out of the cities.

3.2 The Dutch buyer’s housing market

Currently more and more houses are sold above the asked selling price because of an increase in the demand for houses. Specific groups, like starters, appear to be affected the most. Due to their relatively low income compared to other groups they are the most affected by higher house prices. Increasing prices can lead to a situation where people need to search for smaller houses or for houses in surrounding municipalities. Because of the increasing house prices, private investors become more active on the buyer’s housing market. In 2016, almost 6

percent of the sold houses were bought by private investors. Many of these private investors buy houses that are suited for starters (MIA, 2017).

Below figure shows that the house prices are approaching the price level of 2008. And they are expected to increase even further the next years. Except for the years during the global financial crisis, the value of houses in the Netherlands increased since 2001.

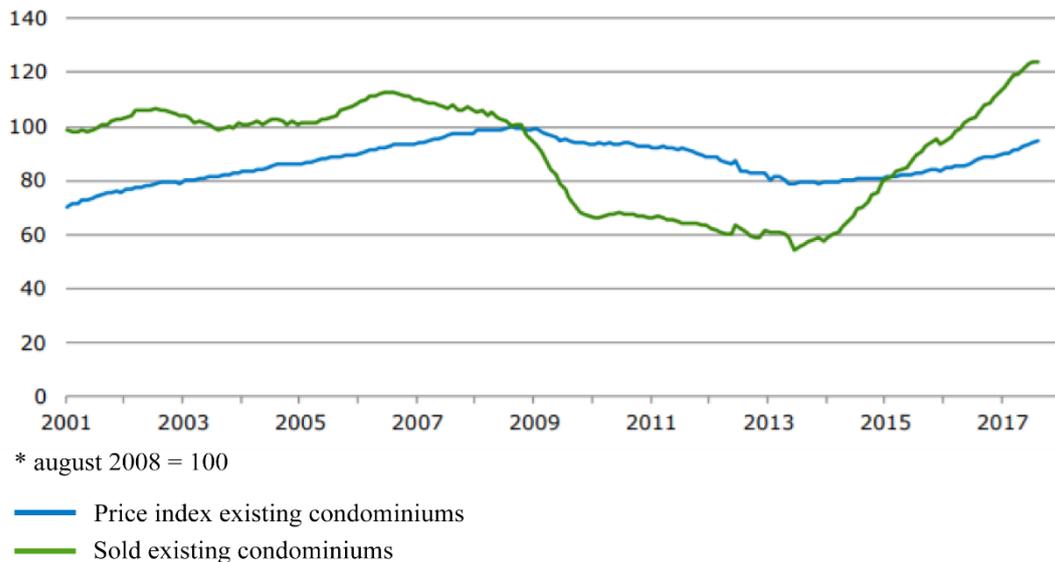


Figure 5. *Development of price and transactions existing condominiums*
 Source. CBS/Kadaster, 2017, edited BZK.

High housing prices as such are not a new phenomenon, but they are accompanied by sharpened rules and regulations. Among buyers on the housing market, sharpened financial rules cause the most problems for starters. The loan-to-value (LTV) rate of mortgages drops gradually to a 100 percent in 2018. This decrease means that starters have less access to the housing market, since they need more of their own money to invest in a house. New starters on the housing market have to pay their mortgage back in 30 years if they want to benefit from the mortgage interest deduction. People who bought a house before 2013 are not bound to a specific time period (MIA, 2017).

Even though this paper concentrates on the buyer's market, the current situation for starters is also caused by movements on the rental market. Access to social housing has become more strict, while access to affordable houses on the buyer's market has become more difficult. The combination of these two factors makes sure that starters and other groups rely more on the private rental market. Since the Dutch government has been stimulating people to buy a house for a long time, the private rental market is not as much developed as the buyer's market and

the social rental market. It appears that there is an increase in demand for rental houses in the middle segment. The supply does not keep up, and has called the attention of municipalities and private parties. The parliament created the so-called ‘cooperation tables’ to stimulate local cooperation between municipalities and private parties, so that people with middle incomes have an alternative for the regulated rental market (MIA, 2017).

3.3 Governmental interference

The role of the government affects starters or households in general in two ways. The first one is that municipalities are actively trying to facilitate housing for starters through zoning plans and cooperation’s with developers, while more passively creating urban environments that attract starters. Secondly, the land-use zoning stops the uncontrolled, widespread urbanization, which at the same time causes increasing house prices. If the housing market would have been purely economically driven, starters would have lived at the city edges in houses with a lower quality standard. At the same time the high quality demands for new housing developments causes a constrain in the supply of new houses.

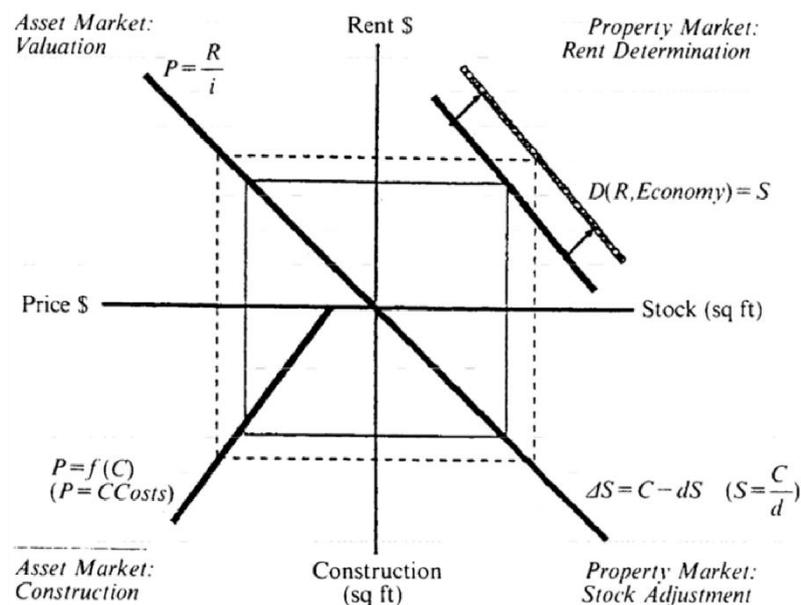


Figure 6. *The property and asset markets: Property demand shift.*

Source. DiPasquale and Wheaton (1992).

In the figure shown above, the impact of the broader economy on the real estate market in the long run is demonstrated. The impacts on the real estate market of changes in the macroeconomy, interest rates, taxes on real estate and construction are visualized. An increase in the number of households, like the current Dutch situation, increases the demand for space which changes the demand curve in the up-right quadrant in an upwards direction. For a given

level of available houses, rents will rise. These higher rents will lead to greater asset prices in the up-left quadrant, which then will bring about a higher level of construction in the down-left quadrant. On the long run, this will generate a greater housing stock in the down-right quadrant and a new market equilibrium is visible through the dashed box that lies outside the inner box. This inner box represents the original equilibrium (DiPasquale & Wheaton, 1992). However, if the supply is constrained through, for example, a regulation system, the stock will not meet the demand and prices will stay at a high level.

Housing prices also increase because there are constraints where new houses can be build, in the form of defined municipality boundaries.

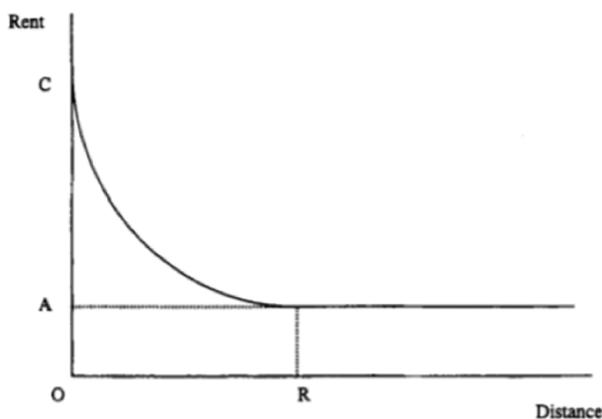


Figure 7a. *Urban rent theory.*

Source. Evans, A. W. (2004).

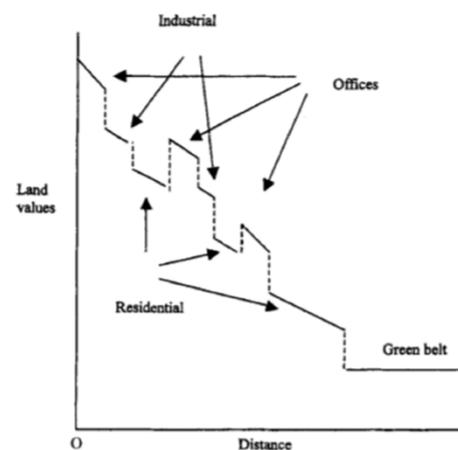


Figure 7b. *Urban rent theory with planning controls.*

Normally, the price of land decreases more and more when the distance from the city centers grows (figure 7a). Distance from the city center is represented along the horizontal axis. The rent in the city center is represented by point C and the rent of agricultural land surrounding the city is represented by point A. The location choice is determined by a consideration between the possible commuting time and/or costs and the rent prices. Households with high incomes who want large houses with gardens may choose to locate far from the city center even when commuting costs are high, because savings on the costs of space are even higher. Poorer households may live near their workplaces, which might be near the city center. When planning controls limit the available supply of land while demand increases, the value of this land will increase as well. In absence of these planning controls, less profitable land would have been converted, so it could be used for, say, new houses. The smoothly decreasing price rate would be retained. With planning constrictions, conversions like these are not possible

and because the land within the city boundaries has to be densified, prices will rise extra in these plots of transformation developments (figure 7b) (Evans, 2004).

So the active role of the government, to protect certain population groups and giving them access to the city, leads at the same time to a more difficult situation on the housing market for these population groups.

4. METHODOLOGY

4.1 Discrete choice model

In light of the proposed research question and hypothesis this study employs a residential location choice model. By using a discrete choice model a description can be given about the impact of family and personal characteristics, housing characteristics, city characteristics and lifestyle factors on the choice of starters to live in the G8 or not. Discrete choice models explain choices between two or more discrete alternatives and are advantageous in terms of their ability to accommodate multiple (residential) choice factors. These factors provide a multi-faceted perspective (Frenkel et al, 2013). The aim of the model is to explain the probability that a starter made a realized move from any municipality in the Netherlands to a municipality in the G8 or not, and to prove the possible influence of available starter homes on this location choice. Movements were not tracked over time.

Four groups of explanatory variables are used to indicate the choice probability of a starter to have made a realized move to the G8 or not ($Y1_i$). This choice is dependent on family and personal characteristics, housing characteristics, city characteristics and lifestyle factors. These groups exist of a combination of characteristics as mentioned in the theoretical background. Because there are several factors that affect location choice, a discrete choice model is used (Frenkel et al, 2015).

In line with the described categories, the discrete choice model for the location choice is:

$$Y1_i = \alpha + \delta_1 Income_{ni} + \beta_2 Age_{ni} + \delta_3 Education_i + \delta_4 Householdcomp_{ni} + \delta_5 Gender_i + \delta_6 Partner_i + \delta_7 Ethnicity_i + \delta_8 SurfaceLivingArea_i + \delta_9 Amountofrooms_i + \delta_{10} Garage_i + \delta_{11} Outsidearea_i + \delta_{12} Housetype_i + \delta_{13} Religious_i + \delta_{14} Contact_i + \delta_{15} Work_i + \delta_{16} Scarcity_{ci} + \beta_{17} PercStartersHouses_{ci} + \delta_{18} Year_t + \varepsilon \quad (1)$$

where $Y1_i$ in equation (1) represents the probability that a starter (i) moved to a condominium in the G8 or not:

$Y1_i = 1$ if the respondent moved to the G8 and

$Y1_i = 0$ if the respondent didn't move to the G8

And

| | |
|--------|--|
| A | Constant |
| Income | Categorical variable for income in euros |
| Age | Age head of the household |

| | |
|--------------------|--|
| Education | Categorical variable for education levels in Dutch education system |
| Householdcomp | Categorical variable for composition of the household |
| Gender | Dummy for gender |
| Partner | Dummy for partner |
| Ethnicity | Categorical variable for ethnicity |
| SurfaceLivingArea | Categorical variable for living area in M2 |
| Amountofrooms | Amount of rooms |
| Garage | Dummy for garage/ carport |
| OutsideArea | Dummy for outside area |
| House type | Categorical variable for house type |
| Religious | Dummy for religion |
| Contact family | Dummy for amount of contact with family |
| Contact friends | Dummy for amount of contact with friends |
| Work | Dummy for occupation |
| Scarcity | Dummy for scarcity on the regional housing market |
| PercStartershouses | Percentage of sold starter homes as a percentage of total sold homes per municipality (0 – 100 %) Starter home is up to €200.000,- |
| E | Error term |

Respondents are referred to with i , while the respondent can be part of a household n_i and inhabitant of a municipality c_i . Years are referred to with t and the variables are directed to with δ .

4.2 Multinomial logit model

In order to investigate the impact of the aforementioned variables, a multinomial logit model (MNL) is estimated in the analysis of choice among municipalities in the research region. In a MNL model it is expected that a respondent can choose one alternative out of a set of alternatives. In this case one Dutch municipality out of all the Dutch municipalities. Among other ways of using MNL models, they have the ability to reproduce the effects of multiple variables simultaneous (Frenkel et al, 2015). The output of a MNL model (choice probabilities) makes it a useful tool for analyzing the effect of changes in the variables on the dependent variable.

5 DATA (STATISTICS)

5.1 Data collection

Data is collected from the Ministry of Internal Affairs (WoON data) and the Dutch association of Real Estate brokers and experts (NVM). The data provided by these two sources allows the theoretical concept of section two to be used in practice. The WoON research is a cooperation between the Dutch Ministry of Internal Affairs (MIA) and the Dutch Central Bureau of Statistics (CBS). They provide data, containing information concerning the past, current and future housing situations of respondents throughout The Netherlands. The data about almost all variables of the conceptual model is collected through this dataset. Examples are: income, highest level of education and housing characteristics of the respondents. The three most recent WoON researches of 2009, 2012 and 2015 are used for this paper and combined in order to create a bigger dataset. WoON datasets are often used for national researches, since the amount of respondents offers a possibility to make national researchers representative.

The NVM provided data about sold starter homes as percentage of the total amount of sold houses per Dutch municipality on the buyer's market between 2003 and 2014. This information is used to measure the availability of starter homes, since this is the closest to real availability as the NVM could provide. Starter homes are defined as houses that are sold for less than €200.000, -. This is a general definition that can differ per region and through time. But this paper does not have the time, nor does it have the monetary funds to get data that is corrected for inflation over the years and for regional differences. Since €200.000, - is used as a definition of a starters homes for several years and on a national scale by WoON, it is maintained in this paper as well. The NVM database contains information about more or less 80% of the market transactions in the Netherlands and is therefore widely used in Dutch research.

The two datasets were merged on the year when a respondent made a move to a certain municipality and the percentage of starter homes in the same year in the municipality of interest.

TABLE 1: Oversight variables

| Category | Variable | Description |
|---|--------------------|--|
| <i>Personal/ family characteristics</i> | Income | Categorical variable for income in euros |
| | Age | Age head of the household |
| | Education | Categorical variable for levels Dutch education system |
| | Householdcomp | Categorical variable for household composition |
| | Gender | Dummy variable gender |
| | Partner | Dummy variable partner |
| | Ethnicity | Categorical variable ethnicity |
| <i>Housing characteristics</i> | SurfaceLivingArea | Categorical variable surface in M2 |
| | Amountofrooms | Categorical variable amount of rooms |
| | Garage | Dummy variable garage/ carport |
| | Outsidearea | Dummy variable outside area or not |
| | Housetype | Categorical variable house type |
| | Year | Categorical variable year of moving |
| <i>Lifestyle factors</i> | Religious | Dummy variable religion |
| | Contact | Dummy variable contact family |
| | Contact | Dummy variable contact friends |
| | Work | Dummy variable paid work |
| <i>City characteristics</i> | Scarcity | Dummy variable scarcity housing market |
| | PercStartersHouses | Sold starter homes (<€200.000,-) as percentage of total sold homes per Dutch municipality. |

5.2 Respondent selection

Respondents of the WoON questionnaire were in this paper selected on a couple of characteristics. Officially, WoON uses the following definition of a starter on the condominium housing market: “people who intent to move from their parents or from a rental house to a condominium for the first time or people who recently moved to a condominium”. The common age of starters on the buyer’s market is in their twenties or early thirties (Weide, 2016).

The WoON questionnaires were held in 2009, 2012 and 2015. Recent moves (with 2 years before the questionnaires) therefore ensures the use of only a part of the NVM data, namely 2007 – 2014. Respondents were selected on age (<33 years), current housing situation (condominium) and they had to move within two years before one of the questionnaires within the Netherlands. This selection offered 10.700 respondents and will now be referred to as model 2.

Unfortunately this reduces the potential of the NVM dataset. Hence, the NVM provided data for the period of 2003-2014. In order to make use of all the provided data a second approach is used where the criterium of 'recent move' is dropped. Furthermore the age spectrum is enlarged, since someone who was 33 in 2003 could be 44 in the latest WoON questionnaire. In the second approach respondents were selected on age (<44 years), current housing situation (condominium) and they had to move in the period 2003 - 2014 within the Netherlands. This selection offered 25.900 respondents and will now be referred to as model 1.

5.3 Descriptive statistics

The descriptive statistics of model 1 can be found in table 2. The descriptive statistics of model 2 can be found in table 3. The tables show the total amount of observations (obs) the mean and the standard deviation (std dev.) of all the variables separately. To improve the transparency of this paper the summary statistics are also shown for the three separate WoON questionnaire years. This makes it possible to compare the statistics for the different years. Even though the amount of observations differ per time period, the summary statistics are comparable throughout the periods. The separate summary statistics can be found in appendix 1.

TABLE 2: DESCRIPTIVE STATISTICS MODEL 1

| Variable | Obs | Mean | Std. Dev. |
|--|--------|----------|-----------|
| Family and personal characteristics | | | |
| <i>Income</i> | 25,899 | 5.838218 | 3.413212 |
| <i>Age Head Household</i> | 25,899 | 34.43778 | 5.682674 |
| <i>Education</i> | 25,899 | 4.321595 | .9313122 |
| <i>Household composition</i> | 25,899 | 2.100853 | .6782754 |
| <i>Gender</i> | 25,899 | 1.495193 | .4999865 |
| <i>Partner</i> | 25,899 | .6910692 | .4620615 |
| <i>Ethnicity</i> | 25,899 | 1.239391 | .5856211 |
| House Characteristics | | | |
| <i>Surface living area</i> | 25,899 | 4.436233 | 1.478753 |
| <i>Amount of rooms</i> | 25,899 | 3.411599 | 1.123784 |
| <i>Garage or carport</i> | 25,899 | .3231013 | .4676701 |
| <i>Outside area</i> | 25,899 | .7921541 | .4057737 |
| <u><i>House type</i></u> | | | |
| <i>Flat or apartment</i> | 25,899 | .2101626 | .4074318 |
| <i>Terraced</i> | 25,899 | .5073169 | .4999561 |
| <i>Semi-detached</i> | 25,899 | .1442913 | .3513916 |
| <i>Detached</i> | 25,899 | .0939032 | .2916997 |
| Lifestyle Factors | | | |
| <i>Religion</i> | 25,899 | .5641531 | .4958769 |
| <i>Contact family</i> | 25,899 | .9023514 | .2968446 |
| <i>Contact friends</i> | 25,899 | .837098 | .3692834 |
| <i>Paid work</i> | 25,899 | 1.068072 | .2518745 |
| City Characteristics | | | |
| <i>Scarcity</i> | 25,899 | .3056875 | .4607069 |
| <i>Percentage starters houses</i> | 25,899 | 46.8877 | 19.61933 |
| <i>Year of questionnaire</i> | 25,899 | 2011.564 | 2.388415 |

TABLE 3: DESCRIPTIVE STATISTICS MODEL 2

| Variable | Obs | Mean | Std. Dev. |
|--|--------|----------|-----------|
| Family and personal characteristics | | | |
| <i>Income</i> | 10,716 | 6.795446 | 3.57512 |
| <i>Age Head Household</i> | 10,716 | 38.78677 | 13.03178 |
| <i>Education</i> | 10,716 | 4.245894 | 1.015653 |
| <i>Household composition</i> | 10,716 | 2.26997 | .7746555 |
| <i>Gender</i> | 10,716 | 1.525943 | .4993498 |
| <i>Partner</i> | 10,716 | .6991506 | .4586488 |
| <i>Ethnicity</i> | 10,716 | 1.237122 | .590046 |
| House Characteristics | | | |
| <i>Surface living area</i> | 10,716 | 4.474617 | 1.532175 |
| <i>Amount of rooms</i> | 10,716 | 3.305804 | 1.140886 |
| <i>Garage or carport</i> | 10,716 | .3601157 | .4800561 |
| <i>Outside area</i> | 10,716 | .7516797 | .4320587 |
| <u><i>House type</i></u> | | | |
| <i>Flat or apartment</i> | 10,716 | .2556924 | .4362701 |
| <i>Terraced</i> | 10,716 | .4341172 | .4956636 |
| <i>Semi-detached</i> | 10,716 | .1338186 | .3404732 |
| <i>Detached</i> | 10,716 | .121034 | .326182 |
| Lifestyle Factors | | | |
| <i>Religion</i> | 10,716 | .5469392 | .4978151 |
| <i>Contact family</i> | 10,716 | .8811124 | .3236714 |
| <i>Contact friends</i> | 10,716 | .8238149 | .3809954 |
| <i>Paid work</i> | 10,716 | 1.14427 | .3513799 |
| City Characteristics | | | |
| <i>Scarcity</i> | 10,716 | .3161627 | .464999 |
| <i>Percentage starters houses</i> | 10,716 | 46.35629 | 19.29481 |
| <i>Year of questionnaire</i> | 10,716 | 2010.756 | 2.3794 |

5.4 The G8 situated in the Netherlands

The eight biggest cities of the Netherlands are Amsterdam, Rotterdam, The Hague, Utrecht, Eindhoven, Tilburg, Almere and Groningen (the G8). They are the biggest cities based on their population numbers. All eight of them have a strong regional or national economic position and they offer (academic) schooling opportunities that have a national or regional attractiveness. Among other reasons, these cities therefore attract a lot of people who are at the start of their employment and housing career. In section three this development is described in the research context. The eight cities can be found in the north(east), west, south and middle of the Netherlands. In below map Tilburg is not shown, but the city is situated in the south of the Netherlands close to Eindhoven.

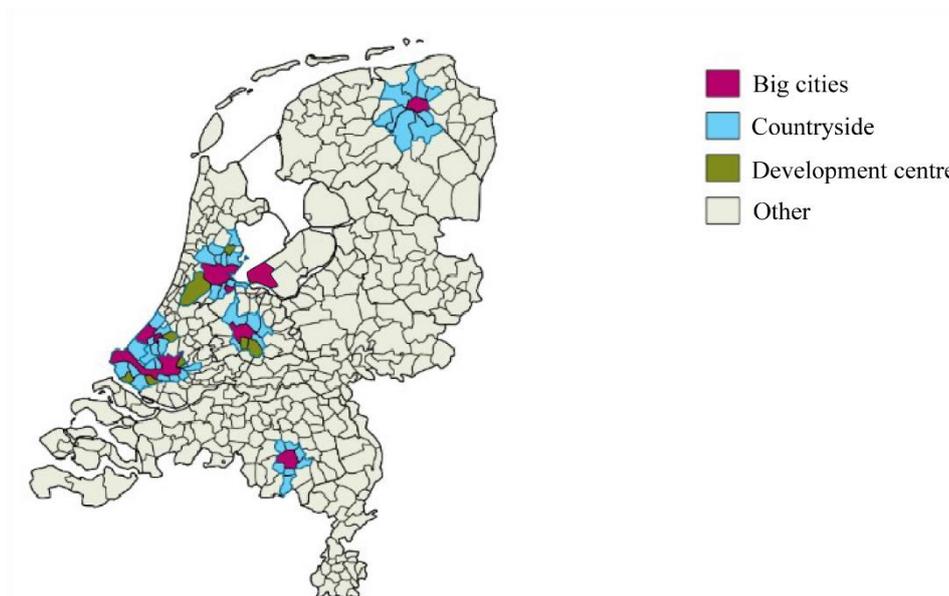


Figure 8. *The seven city-regions.*
Source. CBS.

5 . RESULTS

The following section will provide the results of the two approaches. Table 4 presents the outcomes of the two logistic regression models. The parameter estimates were obtained following an estimation procedure with various variable combinations and hypothesis testing for variable significance. The results of model 1 are based on information from 25.900 respondents. This accounts for home owners below the age of 44 who moved between 2003 - 2014. Table 4 also presents the parameter estimates of model 2, people under the age of 33, who just bought a house and moved within two years before one of the three WoON questionnaires. These results are based on information from 10.700 respondents

Although not all the results of the models are significant, many of the variables prove to have a significant influence on location choice. In all the models the prob> F value is 0.0. This value is testing the null hypothesis that all the model coefficients are 0. If this is true, it means that ‘something is going on’ in a research. Therefore, this model explains the dependent variable in a correct way. Furthermore, the results show that the pseudo r-squared is between 0.20 and 0.24. The pseudo r-squared is an approach to the r-squared, which is used for linear regression models. The r-squared shows to what extent the model explains the dependent variable.

TABLE 4: ESTIMATION RESULTS FOUR MODELS

| Variable of interest | Model 1 | Model 2 |
|--|-------------------------|------------------------|
| Percentage starter houses | 0.0473*** (0.00150) | 0.0482*** (0.00245) |
| Family and personal characteristics | | |
| <i>Income</i> | | |
| <33.000 | -0.00000965 (0.0820) | -0.0590 (0.148) |
| 44.000-54.999 | 0.0425 (0.0852) | -0.133 (0.148) |
| 55.000-65.999 | 0.0640 (0.0890) | -0.00310 (0.160) |
| 66.000-76.999 | 0.279** (0.0970) | 0.290 (0.170) |
| 77.000-98.999 | 0.389*** (0.0955) | 0.397* (0.167) |
| 99.000-118.999 | 0.610*** (0.123) | 0.462* (0.229) |
| 119.000-138.999 | 0.853*** (0.167) | 0.867** (0.272) |
| 139.000-188.999 | 1.063*** (0.167) | 0.682* (0.318) |
| >189.000 | 1.516*** (0.216) | 0.890** (0.357) |
| <i>Age Head Household</i> | 0.0193*** | -0.00757** |

TABLE 4: CONTINUED

| | Model 1 | Model 2 |
|--|-----------------------|-----------------------|
| <i>Education</i> | | |
| Lower education | -0.381** (0.145) | -0.334 (0.194) |
| LBO | -0.842*** (0.116) | -0.652*** (0.149) |
| MAVO, MULO, VMBO | -0.448*** (0.0877) | -0.490*** (0.115) |
| HAVO, VWO, MBO | -0.545*** (0.0432) | -0.552*** (0.0659) |
| <i>Household composition</i> | | |
| Multi-person household with underaged kids | 0.253*** (0.0677) | 0.450*** (0.109) |
| Multi-person household without underaged kids | 0.229** (0.0663) | 0.188* (0.0965) |
| <i>Gender</i> | | |
| Man | -0.0620 (0.0388) | -0.0580 (0.0577) |
| <i>Partner</i> | | |
| Single | -0.0100* (0.0498) | -0.174* (0.0802) |
| <i>Ethnicity</i> | | |
| Non-western immigrant | 1.467*** (0.0594) | 1.385*** (0.0933) |
| Western immigrant | 0.369*** (0.0635) | 0.361*** (0.0941) |
| House characteristics | | |
| <i>Surface living area</i> | | |
| <50 m2 | 0.390*** (0.115) | 0.270 (0.167) |
| 50-69 m2 | 0.224** (0.0715) | 0.132 (0.109) |
| 90-119 m2 | -0.105 (0.0598) | -0.0852 (0.0891) |
| 120-149 m2 | 0.0464 (0.0709) | -0.0528 (0.103) |
| 150-199 m2 | 0.05464 (0.0709) | 0.121 (0.120) |
| >200 m2 | -0.0485 (0.108) | -0.0664 (0.152) |
| <i>Amount of rooms</i> | | |
| 1-2 rooms | -0.152 (0.0816) | -0.137 (0.123) |
| 4 rooms | -0.103 (0.0589) | 0.0311 (0.0842) |
| 5 rooms | -0.0952 (0.0707) | 0.0683 (0.103) |
| 6 rooms | -0.182* (0.0842) | 0.0569 (0.125) |
| <i>Garage or carport</i> | -0.303*** (0.0527) | -0.386*** (0.0759) |

TABLE 4: CONTINUED

| | Model 1 | Model 2 |
|-------------------------------|-----------------------|-----------------------|
| <i>Outside area</i> | 0.0301 (0.0646) | -0.0203 (0.0909) |
| <i>House type</i> | | |
| Flat or apartment | 0.0933 (0.0777) | -0.103 (0.107) |
| Terraced | -1.232*** (0.0884) | -1.248*** (0.124) |
| Semi detached | -2.081*** (0.119) | -1.999*** (0.172) |
| Detached | -2.591*** (0.152) | -2.281*** (0.191) |
| <i>Year of questionnaire</i> | | |
| 2009 | -0.0466 (0.0676) | -0.000406 (0.0952) |
| 2011 | 1.197*** (0.219) | 0.0134 (0.522) |
| 2012 | 1.116*** (0.218) | -0.0744 (0.536) |
| 2014 | 1.094*** (0.219) | -0.516 (0.778) |
| 2015 | 0.986*** (0.219) | -0.911 (0.788) |
| Lifestyle factors | | |
| <i>Religious</i> | -0.247*** (0.0409) | -0.211*** (0.0600) |
| <i>Contact family/friends</i> | | |
| >1 time per week (family) | -0.226*** (0.0610) | -0.137 (0.0886) |
| >1 time per week (friends) | 0.164** (0.0551) | 0.279** (0.0844) |
| <i>No paid work</i> | 0.130 (0.0752) | 0.0754 (0.0933) |
| City characteristics | | |
| <i>Scarcity</i> | 1.689*** (0.0531) | 1.709*** (0.0857) |
| <i>N</i> | 25899 | 10716 |
| <i>pseudo R²</i> | 0.240 | 0.205 |

Note: Dependent variable is log of choice to live in the G8 or not. The reference category include Income 33.000-43.999, Highest education HBO/University, Household composition Single-person household, Gender Man, Partner Single, Ethnicity Native, Surface living area 70-89 m2, Amount of rooms 3 rooms, No garage, No outside area, Year 2008, Not religious, Less 1 time per week contact with family or friends, Paid work, No scarcity, All models include constant term. Standard errors in parentheses.

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

5.1 Variable of interest

The purpose of this study is to show to what extent the availability of starter houses as a percentage of the total available houses per Dutch municipality has an effect on realized location choices of starters to live in the G8 or not. In addition to the main research question the model results give the opportunity to (not) reject hypothesis one. The models 1 and 2 show a significant influence of percentage of starter houses per Dutch municipality on location choice of the starters. Model 1 shows that each additional percentage of starter houses increases the odds of living in the G8 by 4.7% at a significance level of 0.001. Model 2 shows that each additional percentage of starter houses increases the odds of living in the G8 by 4.8% at a significance level of 0.001. In other words: If the percentage of starter houses is higher, starters are more likely to live in the G8. If this percentage would be 100% all the homes in a municipality would be less than €200.000,-. Currently there's a growing societal/political debate that derives from an assumed inability to provide a suitable housing supply for starters in certain cities. The results show that the availability of starter houses in a municipality actually has an effect on the realized location choice of starters to reside in the G8 or not. What these results furthermore imply will be discussed in the conclusion.

This paper tested hypothesis H0 that there's no relationship between the availability of starter homes and the probability for a starter to live in the G8 and alternative hypothesis H1 that there's a relationship between the availability of starter homes and the probability for a starter to live in the G8. This is known as a two-sided test, since the outcomes can show a positive or a negative relationship. As visible in table 4, the hypothesis H0 can be rejected, since there's a positive relationship between the availability of starter homes and the probability for a starter to live in the G8. If the percentage of starter houses becomes higher, starters become more likely to live in the G8. The results provided significant answers to the main research question and the hypothesis.

In section 2 it is shown that demand for houses affects the supply. In the bigger cities in the Netherlands is an increasing demand for houses which in its turn leads to increasing housing prices. This has its effect on the position of groups with lower incomes, like starters. However supply also affects demand. This is in line with Visser et al. (2008) who state that supply and demand (preferences) are both important indicators of housing prices and location choice. Above results might suggest that as long as starter houses are available it has a positive effect on the attraction of the G8 on starters as a location to reside.

5.2 Control variables

The other significant explanatory variables will be shown in sequence of the two different models in the upcoming section.

Model 1:

Model 1 shows that households with higher incomes are significantly more likely to live in the G8 than households with an income between €33.000, - and €44.000, -. Furthermore, the model shows that, compared to higher educated respondents (HBO or university), people who are less educated are less likely to live in the G8. Multi-person households with or without children are significantly more likely to live in the G8. The surface of the living area has significant influence on location choice. When the surface is smaller than 70 to 89 square meters the respondents are more likely to live in the G8. When the surface is between 90 to 119 square meters, respondents are less likely to live in the G8. If the dwelling has one or two rooms, respondents are significantly less likely to live in the G8. Respondents with a garage are significantly less likely to live in the G8 compared to respondents without a garage. Respondents that live in a terraced, semi-detached or detached house are significant less likely to live in the G8 compared to respondents who live in a flat or an apartment. Religious respondents are significantly less likely to live in the G8 compared to respondents who are not religious. Respondents who see their family more than one time per week are less likely to live in the G8 than respondents who see their family less than one time per week. However, for respondents who see their friends more times per week it is the other way around. Compared to areas without scarcity, respondents who live in areas with scarce housing markets are more likely to live in the G8.

Model 2:

Also model 2 shows that households with higher incomes are more likely to live in the G8, although not all the outcomes of the specific income groups are significant. If the age of the head of the household increases households are significantly less likely to live in the G8. Compared to higher educated respondents (HBO or university), people who are less educated are less likely to live in the G8. Multi-person households with or without children are significantly more likely to live in the G8. Respondents with a garage are significantly less likely to live in the G8 compared to respondents without a garage. Respondents that live in a terraced, semi-detached or detached house are significant less likely to live in the G8 compared to respondents who live in a flat or an apartment. Religious respondents are significantly less likely to live in the G8 compared to respondents who are not religious.

Respondents who see their friends more than one time per week are more likely to live in the G8 than respondents who see their friends less than one time per week. Model 2 indicates that, compared to areas without scarcity, respondents who live in areas with scarce housing markets are more likely to live in the G8.

General comparison of the control variables with previous studies.

The outcomes of the two models are in line with previous studies, which conclude that an higher income, age (Linde et al, 1986, Baemisch et al, 2001), education (Baemisch et al, 2001, Sander and Testa, 2009) and having a partner (Baemisch et al, 1986 and Mulder, 2012) have a positive influence on the possibilities of a household on the housing market. Both models indicate that (non)western migrants are more likely to live in the G8. This agrees with Visser et al. (2008) about the influence of ethnicity amongst other socio-cultural characteristics on the choice behaviour of house buyers.

According to Frenkel et al. (2013), homeowners who reside in large dwellings and single-detached houses show a tendency to reside in suburban locations and the metropolitan fringe. This preference in searching for homeownership, large apartments and single-detached houses is associated with lower land values and higher supply of such dwelling units in the outer suburbs. This corresponds to models 1 and 2. The models show that respondents who live in the G8 are most likely to live in a three room dwelling. With more and with less rooms, the respondents are more likely to live outside the G8. Model 1 and 2 were however able to show that people with a garage are less likely to live in the G8 than people without a garage.

5.3 Discussion

Four explanatory variables arrest the attention for (partially) not proving to have a significant influence on the dependent variable in the different models: paid work, having an outside area and the surface of the living area. This is mainly because similar variables in these models prove to have an significant effect in line with previous papers. Even though the variables are tested on correlation, it might be that similar variables are partly responsible for the insignificance of the above four. Paid work and income were expected to show similar results. This was also expected for the following: garage and outside area; house type in combination with surface of the living area or the amount of rooms.

The fact that model 2 shows a different outcome than model 1 for age of the head of the household can be explained by the set-up of both models. In model 1, people up to the age of 44 are included, while the maximum age in model 2 is 33. The age of a respondent is, in many

cases, related to the age of the head of the household. Sometimes, this is the respondent itself and the age of a partner is often close to their own age.

6. CONCLUSIONS

The purpose of this paper was to add information to the societal/ political discussion whether (governmental) housing institutions should interfere in the housing market for starters.

National political debates were held because there were questions if the availability of starter homes was sufficient in cities in economical better performing areas. In order to add this information to the discussion, this paper tried to give an answer to the following research question: To what extent had the availability of starter homes as a percentage of the total available homes per Dutch municipality an effect on realized location choices of starters to live in the G8 or not.”. Therefore, a theoretical concept provided the basis for a model that could describe location choice. The decision for a starter to move to a certain location is affected by family and personal characteristics, house characteristics, city characteristics and lifestyle factors. The percentages of starters houses per Dutch municipality between 2003-2014 were added to show if this variable had a significant effect on the location choice of starters. As described in the introduction a starter home is a house up to €200.000,-. In this paper it’s the available houses up to this amount as a percentage of the total available houses per Dutch municipality per year.

The results show that the availability of starter homes is an important variable in the location choice of starters. It is assumed by the Dutch government and other public or private parties on the housing market that the G8 is not able to house starters anymore. However, the results show that there’s still enough supply to attract new starters to these cities. This could stimulate (housing) policy makers to continue building new exclusive starter homes, which will have a positive effect on attracting new starters. Attracting new starters is of fundamental importance for economic development of cities, as is written in the introduction. The results add attribution to the current political discussion about the housing situation for starters on the buyers’ market. This study confirms many of the results of earlier studies which were used to set up the conceptual model. Furthermore it shows a couple of other important indicators of location choice to live in the G8 or not. Education, income, (desired) housing characteristics and household composition are important factors. It seems that among the starters the G8 is especially attractive for higher educated people with a job, that are fine with living in a smaller house. A potential outcome could be that even smaller houses in the G8 are only available for those who are well educated and (potentially) have a good income. This leads to a next question: “for which group of starters do the municipalities of bigger cities want to create houses?; to what extent is the undivided city a real target?”

The findings of this paper are relevant to policy makers if they want to house these groups for reasons such as economic benefits. Already, governmental institutions are cooperating with market parties, like developers and investors, to reach this goal. This study shows that it makes sense to come up with implementations like special zoned areas for starter houses. Whether it is a political decision (undivided city), an economical decision or if it has another motivation, the results of this paper can be taken into consideration.

For future research this paper could be improved by adding more (up-to-date) information about the total housing market in The Netherlands. There is a big social housing system in The Netherlands that makes sure that people with less income can still find a house in cities where housing prices are increasing rapidly, not to mention the influence of the private rental market. There is not enough supply to offer a decent alternative to the buyer's market or the social rental market. Other factors to consider are inflation and regional differences. The housing price of €200.000, - euros will not mean the same in all the years and also differs in different regions. However, as mentioned earlier, this paper lacks time as well as monetary funds to establish this type of research. For now, an approach on national scale is used to give the best possible overview of the national housing market for starters. This also enabled the use of data about many respondents, which is assumed to have a positive influence on the usability of this research.

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APPENDIX

Appendix 1

Summary statistics model 1 and 2 for the separate WoON questionnaires

TABLE 2.1: MODEL 1 woon 2009

| Variable | Obs | Mean | Std. Dev. |
|--|-------|----------|-----------|
| Family and personal characteristics | | | |
| <i>Income</i> | 8,649 | 10 | 0 |
| <i>Age Head Household</i> | 8,649 | 33.84033 | 5.691219 |
| <i>Education</i> | 8,649 | 4.28986 | .9091681 |
| <i>Household composition</i> | 8,649 | 2.145335 | .7043471 |
| <i>Gender</i> | 8,649 | 1.505954 | .499934 |
| <i>Partner</i> | 8,649 | .7667938 | .4228968 |
| <i>Ethnicity</i> | 8,649 | 1.256561 | .5973355 |
| House Characteristics | | | |
| <i>Surface living area</i> | 8,649 | 4.461209 | 1.535324 |
| <i>Amount of rooms</i> | 8,649 | 3.312522 | 1.121764 |
| <i>Garage or Carport</i> | 8,649 | .3022315 | .4592516 |
| <i>Outside area</i> | 8,649 | .7592785 | .4275462 |
| <i>Flat or apartment</i> | 8,649 | .2302 | .4209851 |
| <i>Terraced</i> | 8,649 | .493112 | .4999698 |
| <i>Semi detached</i> | 8,649 | .1293791 | .3356385 |
| <i>Detached</i> | 8,649 | .0820904 | .2745183 |
| Lifestyle Factors | | | |
| <i>Religion</i> | 8,649 | .5396 | .4984582 |
| <i>Contact family</i> | 8,649 | .9014915 | .2980182 |
| <i>Contact friends</i> | 8,649 | .8377847 | .3686695 |
| <i>Paid work</i> | 8,649 | 1.060932 | .2392192 |
| City Characteristics | | | |
| <i>Scarcity</i> | 8,649 | .3208463 | .4668288 |
| <i>Percentage starters houses</i> | 8,649 | 48.43019 | 19.29851 |
| <i>Year of questionnaire</i> | 8,649 | 2008.727 | .4455162 |

TABLE 2.2: MODEL 1 woon 2012

| Variable | Obs | Mean | Std. Dev. |
|--|-------|----------|-----------|
| Family and personal characteristics | | | |
| <i>Income</i> | 9,102 | 3.640079 | 2.073819 |
| <i>Age Head Household</i> | 9,102 | 34.3864 | 5.728119 |
| <i>Education</i> | 9,102 | 4.310371 | .9475998 |
| <i>Household composition</i> | 9,102 | 2.105911 | .6734729 |
| <i>Gender</i> | 9,102 | 1.488904 | .4999043 |
| <i>Partner</i> | 9,102 | .7726873 | .4191192 |
| <i>Ethnicity</i> | 9,102 | 1.227203 | .5754896 |
| House Characteristics | | | |
| <i>Surface living area</i> | 9,102 | 4.535377 | 1.548403 |
| <i>Amount of rooms</i> | 9,102 | 3.437267 | 1.122224 |
| <i>Garage or Carport</i> | 9,102 | .3395957 | .473598 |
| <i>Outside area</i> | 9,102 | .8001538 | .3999066 |
| <i>Flat or apartment</i> | 9,102 | .1917161 | .3936725 |
| <i>Terraced</i> | 9,102 | .5007691 | .5000269 |
| <i>Semi detached</i> | 9,102 | .1528236 | .3598371 |
| <i>Detached</i> | 9,102 | .1019556 | .3026066 |
| Lifestyle Factors | | | |
| <i>Religion</i> | 9,102 | .5584487 | .4965993 |
| <i>Contact family</i> | 9,102 | .9068337 | .2906814 |
| <i>Contact friends</i> | 9,102 | .8337728 | .3723049 |
| <i>Paid work</i> | 9,102 | 1.067128 | .2502575 |
| City Characteristics | | | |
| <i>Scarcity</i> | 9,102 | .3100417 | .4625358 |
| <i>Percentage starters houses</i> | 9,102 | 44.74973 | 20.0623 |
| <i>Year of questionnaire</i> | 9,102 | 2011.594 | .4910396 |

TABLE 2.3: MODEL 1 woon 2015

| Variable | Obs | Mean | Std. Dev. |
|--|-------|----------|-----------|
| Family and personal characteristics | | | |
| <i>Income</i> | 8,148 | 3.876043 | 2.143061 |
| <i>Age Head Household</i> | 8,148 | 35.12936 | 5.545992 |
| <i>Education</i> | 8,148 | 4.36782 | .9344965 |
| <i>Household composition</i> | 8,148 | 2.047987 | .6513327 |
| <i>Gender</i> | 8,148 | 1.490795 | .4999459 |
| <i>Partner</i> | 8,148 | .519514 | .4996497 |
| <i>Ethnicity</i> | 8,148 | 1.234782 | .5839243 |
| House Characteristics | | | |
| <i>Surface living area</i> | 8,148 | 4.298969 | 1.31918 |
| <i>Amount of rooms</i> | 8,148 | 3.488095 | 1.120233 |
| <i>Garage or Carport</i> | 8,148 | .3268287 | .4690828 |
| <i>Outside area</i> | 8,148 | .8181149 | .3857735 |
| <i>Flat or apartment</i> | 8,148 | .2094993 | .4069762 |
| <i>Terraced</i> | 8,148 | .5305596 | .4990959 |
| <i>Semi detached</i> | 8,148 | .1505891 | .3576699 |
| <i>Detached</i> | 8,148 | .0974472 | .296584 |
| Lifestyle Factors | | | |
| <i>Religion</i> | 8,148 | .5965881 | .4906121 |
| <i>Contact family</i> | 8,148 | .8982572 | .3023283 |
| <i>Contact friends</i> | 8,148 | .8400835 | .3665511 |
| <i>Paid work</i> | 8,148 | 1.076706 | .2661406 |
| City Characteristics | | | |
| <i>Scarcity</i> | 8,148 | .2847324 | .4513146 |
| <i>Percentage starters houses</i> | 8,148 | 47.63865 | 19.24665 |
| <i>Year of questionnaire</i> | 8,148 | 2014.54 | .4983975 |

TABLE 3.1: MODEL 2 woon 2009

| Variable | Obs | Mean | Std. Dev. |
|--|-------|----------|-----------|
| Family and personal characteristics | | | |
| <i>Income</i> | 5,372 | 10 | 0 |
| <i>Age Head Household</i> | 5,372 | 39.27364 | 12.89818 |
| <i>Education</i> | 5,372 | 4.210908 | 1.005481 |
| <i>Household composition</i> | 5,372 | 2.27029 | .7603978 |
| <i>Gender</i> | 5,372 | 1.525689 | .4993861 |
| <i>Partner</i> | 5,372 | .7596798 | .4273177 |
| <i>Ethnicity</i> | 5,372 | 1.241996 | .5940507 |
| House Characteristics | | | |
| <i>Surface living area</i> | 5,372 | 4.522152 | 1.552912 |
| <i>Amount of rooms</i> | 5,372 | 3.26694 | 1.129586 |
| <i>Garage or carport</i> | 5,372 | .3536858 | .4781576 |
| <i>Outside area</i> | 5,372 | .7397617 | .4388054 |
| <i>Flat or apartment</i> | 5,372 | .2596798 | .4384997 |
| <i>Terraced</i> | 5,372 | .4372673 | .4960952 |
| <i>Semi-detached</i> | 5,372 | .1236039 | .3291597 |
| <i>Detached</i> | 5,372 | .1098287 | .3127053 |
| Lifestyle Factors | | | |
| <i>Religion</i> | 5,372 | .5253165 | .4994052 |
| <i>Contact family</i> | 5,372 | .8730454 | .3329531 |
| <i>Contact friends</i> | 5,372 | .816828 | .3868435 |
| <i>Paid work</i> | 5,372 | 1.143336 | .3504476 |
| City Characteristics | | | |
| <i>Scarcity</i> | 5,372 | .3161627 | .464999 |
| <i>Percentage starters houses</i> | 5,372 | 43.80591 | 19.51865 |
| <i>Year of questionnaire</i> | 5,372 | 2008.672 | .4695274 |

TABLE 3.2: MODEL 2 woon 2012

| Variable | Obs | Mean | Std. Dev. |
|--|-------|----------|-----------|
| Family and personal characteristics | | | |
| <i>Income</i> | 3,048 | 3.466864 | 2.148312 |
| <i>Age Head Household</i> | 3,048 | 37.75689 | 12.97283 |
| <i>Education</i> | 3,048 | 4.277559 | 1.035501 |
| <i>Household composition</i> | 3,048 | 2.284449 | .7851558 |
| <i>Gender</i> | 3,048 | 1.512139 | .4999346 |
| <i>Partner</i> | 3,048 | .7352362 | .4412797 |
| <i>Ethnicity</i> | 3,048 | 1.222441 | .5755051 |
| House Characteristics | | | |
| <i>Surface living area</i> | 3,048 | 4.478346 | 1.586223 |
| <i>Amount of rooms</i> | 3,048 | 3.312664 | 1.143327 |
| <i>Garage or carport</i> | 3,048 | .3569554 | .4791801 |
| <i>Outside area</i> | 3,048 | .761811 | .4260452 |
| <i>Flat or apartment</i> | 3,048 | .2378609 | .4258434 |
| <i>Terraced</i> | 3,048 | .4320866 | .4954476 |
| <i>Semi-detached</i> | 3,048 | .1427165 | .3498409 |
| <i>Detached</i> | 3,048 | .1286089 | .3348215 |
| Lifestyle Factors | | | |
| <i>Religion</i> | 3,048 | .5439633 | .4981452 |
| <i>Contact family</i> | 3,048 | .8923885 | .30994 |
| <i>Contact friends</i> | 3,048 | .8339895 | .3721511 |
| <i>Paid work</i> | 3,048 | 1.133858 | .3405558 |
| City Characteristics | | | |
| <i>Scarcity</i> | 3,048 | .3159449 | .4649674 |
| <i>Percentage starters houses</i> | 3,048 | 44.98236 | 18.92544 |
| <i>Year of questionnaire</i> | 3,048 | 2011.582 | .4933076 |

TABLE 3.3: MODEL 2 woon2015

| Variable | Obs | Mean | Std. Dev. |
|--|-------|----------|-----------|
| Family and personal characteristics | | | |
| <i>Income</i> | 2,296 | 3.716463 | 2.30453 |
| <i>Age Head Household</i> | 2,296 | 39.01481 | 13.34551 |
| <i>Education</i> | 2,296 | 4.285714 | 1.010311 |
| <i>Household composition</i> | 2,296 | 2.25 | .7933548 |
| <i>Gender</i> | 2,296 | 1.544861 | .4980919 |
| <i>Partner</i> | 2,296 | .5093764 | .5000211 |
| <i>Ethnicity</i> | 2,296 | 1.245209 | .599545 |
| House Characteristics | | | |
| <i>Surface living area</i> | 2,296 | 4.358449 | 1.399034 |
| <i>Amount of rooms</i> | 2,296 | 3.387631 | 1.159785 |
| <i>Garage or carport</i> | 2,296 | .3793554 | .4853323 |
| <i>Outside area</i> | 2,296 | .766115 | .4233921 |
| <i>Flat or apartment</i> | 2,296 | .2700348 | .4440742 |
| <i>Terraced</i> | 2,296 | .4294425 | .4951044 |
| <i>Semi-detached</i> | 2,296 | .1459059 | .3530888 |
| <i>Detached</i> | 2,296 | .1371951 | .3441282 |
| Lifestyle Factors | | | |
| <i>Religion</i> | 2,296 | .6014808 | .4897 |
| <i>Contact family</i> | 2,296 | .8850174 | .3190704 |
| <i>Contact friends</i> | 2,296 | .8266551 | .3786277 |
| <i>Paid work</i> | 2,296 | 1.160279 | .3669443 |
| City Characteristics | | | |
| <i>Scarcity</i> | 2,296 | .3061847 | .4610078 |
| <i>Percentage starters houses</i> | 2,296 | 54.14739 | 17.10455 |
| <i>Year of questionnaire</i> | 2,296 | 2014.533 | .4990118 |

Appendix 2

Do File Stata

Scenario 1: Past moves starter age

NVM data

```
replace percStarterswoningen=1000 if percStarterswoningen==.
```

```
drop if percStarterswoningen==1000
```

Woondata 2015

```
drop if GemCode==88 (Schiermonnikoog not in Excel)
```

```
drop if GemCode==1931
```

```
drop if GemCode==1930
```

```
drop if GemCode==277
```

Merge Woondata 2009, 2012, 2015

```
gen flatapartment=0
```

```
replace flatapartment=1 if apptyp==3
```

```
replace flatapartment=1 if apptyp==4
```

```
replace flatapartment=1 if apptyp==5
```

```
replace flatapartment=1 if apptyp==6
```

```
gen rijteswoning=0
```

```
gen rijtjeswoning=0
```

```
replace rijtjeswoning=1 if huistyp==3
```

```
replace rijtjeswoning=1 if huistyp==4
```

```
gen halfvrijstaand=0
```

```
replace halfvrijstaand=1 if huistyp==2
```

```
gen vrijstaand=0
```

```
replace vrijstaand=1 if huistyp==1
```

```
gen G8=0
```

```
replace GG8=1 if g4_2==1
```

```
replace GG8=1 if gemcode==14
```

```
replace GG8=1 if gemcode==34
```

```
replace GG8=1 if gemcode==772
```

```
replace GG8=1 if gemcode==855
```

Merge Woondata & NVM data:

```
drop if _merge<3
```

```
gen income=0
```

```
replace income=1 if brutohh<33000
```

```
replace income = 2 if brutohh >= 33000 & brutohh <= 44000
```

```
replace income = 3 if brutohh >= 44000 & brutohh <= 55000
```

```
replace income = 4 if brutohh >= 55000 & brutohh <= 66000
```

```
replace income = 5 if brutohh >= 66000 & brutohh <= 77000
```

```
replace income = 6 if brutohh >= 77000 & brutohh <= 99000
```

```
replace income = 7 if brutohh >= 99000 & brutohh <= 119000
```

```
replace income = 8 if brutohh >= 119000 & brutohh <= 139000
```

```
replace income = 9 if brutohh >= 139000 & brutohh <= 189000
```

```
replace income=10 if brutohh>189000
```

drop if ageop10>4 (no more older than 44) If someone was 34 in 2003, this person can be 44 in 2014)

drop if ageop1==1

drop if huko==2 (no renters)

drop if partner==.

drop if aantkind==.

drop if bjaark==0

drop if bjaark==.

gen garagecarp=0

replace garagecarp=1 if garcarp==1

replace garagecarp=1 if garcarp==2

gen outsidearea=0

replace outsidearea=1 if tuin1==1

replace outsidearea=1 if tuin2==1

replace outsidearea=1 if tuin3==1

replace outsidearea=1 if tuin4==1

gen Religion=0

replace Religion=1 if geloof==1

gen contfami=0

replace contfami=1 if famicont==1

gen contfriends=0

replace confriends=1 if vricont==1

label define income 1 "<33" 2 "33.000-43.999" 3 "44.000-54.999" 4 "55.000-65.999" 5
"66.000-76.999" 6 "77.000-98.999" 7 "99.000-118.999" 8 "119.000-138.999" 9 "139.000-
188.999" 10 ">189.000" 1 "<33.000", replace

label values income income

label define garagecarport 1 "Garage or carport" 0 "No garage or carport"

label values garagecarp garagecarport

label define outsidearea 1 "Outside area" 0 "No outside area"

label values outsidearea outsidearea

label define flatapartment 1 "flat" 0 "Not af flat or apartment"

label define Rijtjeswoning1 1 "Terraced house" 0 "Not a terraced house"

label define Detached 1 "Detached" 0 "Not detached"

label define Semidetached 1 "Semi-detached" 0 "Not semi-detached"

label values flatapartment flatapartment

label values rijtjeswoning Rijtjeswoning1

label values halfvrijstaand Semidetached

label values vrijstaand Detached

label define Religion 1 "Not religious" 0 "Religious"

label values Religion Religion

label define famicont 1 ">1 time per week" 0 "<1 time a month"

label values famicont famicont

label define vricont 1 ">1 time per week" 0 "<1 time per month"

label values vricont vricont

label define G8ornot 1 "G8" 0 "No G8"

label values G8 G8ornot

Drop if bkoop>10000

Scenario 1:

logistic G8 ib(2).income lfthh ib(5).vltoplop ib(1).hht ib(1).gslop ib(first).partner
 ib(1).etniop3 ib(3).oppwon7 ib(1).kamer5 bjaark ib(2003).jrkomwon ib(first).garagecarp
 ib(first).outsidearea ib(first).flatapartment ib(first).rijtjeswoning ib(first).halfvrijstaand
 ib(first).vrijstaand ib(1).Religion ib(first).contfami ib(first).contfriends ib(first).betwrkop
 ib(first).schaarste percStarterswoningen

logit G8 ib(2).income age_head_household ib(5).highest_education
 ib(1).household_composition ib(1).gender ib(first).partner ib(1).ethnicity
 ib(3).surface_livingarea ib(2).amount_rooms ib(first).garagecarp ib(first).outsidearea
 ib(first).flat_apartment ib(first).terraced ib(first).semi_detached ib(first).detached
 ib(1).Religion ib(first).contfami ib(first).contfriends ib(first).paid_work ib(first).scarcity
 percentage_starters_houses ib(first).sysjaar

summary:

sum G8 income age_head_household highest_education household_composition gender
 partner ethnicity surface_livingarea amount_rooms year_moving_in garagecarp outsidearea
 flat_apartment terraced semi_detached detached Religion contfami contfriends paid_work
 scarcity percentage_starters_houses

Scenario 2

drop if Verhuisd<1

drop if voor2010<2

drop if voor2006<2

drop if huko==2

logistic G8 ib(2).income lfthh ib(5).vltoplop ib(1).hht ib(1).gslop ib(first).partner
 ib(1).etniop3 ib(3).oppwon7 ib(2).kamer5 ib(first).garagecarp ib(first).outsidearea
 ib(first).flatapartment ib(first).rijtjeswoning ib(first).halfvrijstaand ib(first).vrijstaand

ib(1).Religion ib(first).contfami ib(first).contfriends ib(first).betwrkop ib(first).schaarste
percStarterswoningen

logit G8 ib(2).income age_head_household ib(5).highest_education
ib(1).household_composition ib(1).gender ib(first).partner ib(1).ethnicity
ib(3).surface_livingarea ib(2).amount_rooms ib(first).garagecarp ib(first).outsidearea
ib(first).flat_apartment ib(first).terraced ib(first).semi_detached ib(first).detached
ib(1).Religion ib(first).contfami ib(first).contfriends ib(first).paid_work ib(first).scarcity
percentage_starters_houses ib(first).sysjaar

Addition:

estimates table second, star(.05 .01 .001)

Scenario 1 & 2

rename lfthh age_head_household
rename vltoplop highest_education
rename hht household_composition
rename gslop gender
rename etniop3 ethnicity
rename oppwon7 surface_livingarea
rename kamer5 amount_rooms
rename jrkomwon year_moving_in
rename flatappartement flat_apartment
rename rijtjeswoning terraced
rename halfvrijstaand semi_detached
rename vrijstaand detached
rename betwrkop paid_work

rename schaarste scarcity

rename percStarterswoningen percentage_starters_houses

label define VLTOPLOP 1 "Lower education" 2 "lbo" 3 "MAVO, MULO, VMBO" 4
"HAVO, VWO, MBO" 5 "HBO, University" 9 "Other", replace

label define HHT 1 "single-person household" 2 "multi-person household with underaged
kids" 3 "multi-person housold without underaged kids", replace

label define GSLOP 1 "Man" 2 "Woman", replace

rename etnicity ethnicity

label define ETNIOP3 1 "Native" 2 "non-western immigrant" 3 "western immigrant", replace

label define KAMER5 -1 "aantal kamers onbekend" 1 "1-2 rooms" 2 "3 rooms" 3 "4 rooms" 4
"5 rooms" 5 "6+ rooms", replace

label define BETWRKOP 1 "Yes" 2 "No", replace

label define SCHAARST 0 "no scarce area" 1 "scarce area", replace

rename bjaar building_year

label define PARTNER 0 "No partner" 1 "Partner", replace

label define OPPWON7 -1 "Een van de inputvar is onbekend" 1 "less 50 m2" 2 "50-69 m2" 3
"70-89 m2" 4 "90-119 m2" 5 "120 -149 m2" 6 "150- 199 m2" 7 "200 m2 or more", replace

rename lfthh age_head_household

rename vltoplop highest_education

rename hht household_composition

rename gslop gender

rename etniop3 ethnicity

rename betwrkop paid_work

rename percStarterswoningen percentage_starters_houses

label define VLTOPLOP 1 "Lower education" 2 "lbo" 3 "MAVO, MULO, VMBO" 4
"HAVO, VWO, MBO" 5 "HBO, University" 9 "Other", replace

label define HHT 1 "single-person household" 2 "multi-person household with underaged
kids" 3 "multi-person housold without underaged kids", replace

label define GSLOP 1 "Man" 2 "Woman", replace

rename ethnicity ethnicity

label define ETNIOP3 1 "Native" 2 "non-western immigrant" 3 "western immigrant", replace

label define ETNIOP3 1 "Native" 2 "non-western immigrant" 3 "western immigrant", replace

label define BETWRKOP 1 "Yes" 2 "No", replace

label define PARTNER 0 "No partner" 1 "Partner", replace

rename gkamer5 desired_amount_rooms

rename gsoortwo desired_housetype

rename srtbrt8 desired_water

rename afsstad desired_distance_city

rename srtbrt7 desired_green

rename gwmbrt desired_urbanity

rename glig desired_center

label define GSRTWON 1 "Flat, apartment" 2 "Terraced, detached, semi-detached" 3
"Boerderij, woning met tuindersbedrijf" 4 "Woning met aparte winkel, kantoor-, praktijk- of
bedrijfsruimte" 5 "Wooneenheid met gezamenlijk gebruik van keuken of toilet" 6
"Woonruimte met gedeelde voorzieningen (b.v. keuken, badgelegenheid) binnen een
woongroep" 7 "Woning die gedeelde voorzieningen (b.v. was- en drooggelegenheid of
hobbyruimte) binnen een project (centraal wonen)" 8 "Geen van deze", replace

label define AGEOP10 1 "15-17 years" 2 "18-24 years" 3 "25-34 years" 4 "35-44 years" 5
"45-54 years" 6 "55-64 years" 7 "65-74 years" 8 "75 years or older", replace

```
label define GKAMER5 1 "1-2 rooms" 2 "3 rooms" 3 "4 rooms" 4 "5 rooms" 5 "6 rooms or
more" 7 ".", replace
```

```
label define SRTBRT8 0 "No water" 1 "Water", replace
```

```
label define AFSSTAD 1 "Till 500 meter" 2 "Tot 5 kilometer" 3 "Tot 15 kilometer" 4 "Tot 30
kilometer" 5 "More than 30" 6 ".", replace
```

```
label define SRTBRT7 0 "No green" 1 "Green", replace
```

```
label define GLIG_N 1 "City center" 2 "15 minutes or less from city center" 3 "More 15
minutes but not on urban edge" 4 "Urban edge" 5 "Countryside" 6 ".", replace
```

OUTPUT

```
estimates store past_movings
```

```
estimates store recent_moves
```

```
estimates table past_moves, varwidth(55) modelwidth(15) star(0.05 0.01 0.001) stats(N r2_p)
```

```
esttab model1 model2 , se pr2 varwidth(25) modelwidth(10) title(TABLE 4: ESTIMATION
RESULTS FOR two SCENARIO'S) addnote("Note: Dependent variable is log of choice to
live in G8 or not. The reference category include Income 33.000-43.999, Highest education
HBO/University, Household composition, Single-person household, Gender Man, Partner
Single, Ethnicity Native, Surface living area 70-89 m2, (desired) Amount of rooms 3 rooms,
Year of moving 2003/2006, Garage, Outside area, Religious, More 1 time per week contact
with family or friends, No paid work, Scarcity, Desired water and green, Desired urbanity
City centre. All models include constant term")nonumbers mtitles("Scenario 1" "Scenario 2")
```

SUMMARY STATISTICS

```
sum income age_head_household highest_education household_composition gender partner
ethnicity surface_livingarea amount_rooms garagecarp outsidearea flat_apartment terraced
semi_detached detached Religion confami confriends paid_work scarcity
percentage_starters_houses sysjaar
```




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