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The effect of intergenerational wealth transfers on homeownership: A quantitative analysis of the development of the accessibility of the Dutch housing market from an international perspective

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THE EFFECT OF INTERGENERATIONAL WEALTH TRANSFERS ON HOMEOWNERSHIP

A quantitative analysis of the development of the accessibility of the Dutch
housing market from an international perspective



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Abstract

In light of the recent academic focus on potential drivers of wealth inequality, this thesis explores the significant role of intergenerational wealth transfers (IWTs) on individuals' chances in the housing market in the Netherlands. Through a statistical quantitative analysis using the DHS data panel, the thesis explores to what extent receiving IWTs impacts the likelihood of becoming a homeowner. The analysis finds that individuals who receive an IWT are more likely to become homeowners. Especially important is the age at which the IWT is received: the younger the individual is, the more likely it is that receiving an IWT influences his homeownership status. In addition, the thesis focusses on the taxation policy of gifts and donations in the Netherlands. It is argued that in a regime with a lower tax rate on IWT, the impact of IWTs on homeownership is bigger. These results are interesting as the Netherlands has been identified as a market-based regime which is associated with high homeownership rates and low dependence on parental support. The increased importance of IWTs can lead to a system with increased inequality in the housing market, and increased wealth inequality in the society as a whole.

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Introduction

Ever since the publishing of the book written by Thomas Piketty (2014) *Capital in the Twenty-First Century*, researchers have been progressively concentrating on the development of wealth inequality. The book highlights the role that “patrimonial capitalism” plays in societies these days, suggesting that inherited wealth is fundamental for the positions of younger generations in a country (Piketty, 2014). In light of this recent academic interest in wealth inequality and its drivers, this thesis delves into the critical role of intergenerational wealth transfers (IWTs) in shaping individuals’ trajectories within the Dutch housing market. Through statistical analysis using quantitative data, the thesis explores how homeownership is increasingly driven by receiving IWTs and examines how this trend has influenced the accessibility of the housing market. The thesis argues that parental financial aid has increased over the past decades and has reduced housing accessibility for young buyers. The age at which individuals receive an IWT is fundamental for success in the housing market. State intervention – such as the tax-free donation policy in the Netherlands – can increase the impact IWTs have on homeownership likelihood which can further intensify intergenerational wealth inequality.

The reason to have chosen the Netherlands as a case for analysing this phenomenon is twofold. First of all, the Netherlands is a country that is characterized by significant wealth inequality alongside relatively low rates of homeownership compared to other European countries (OECD, 2021; Eurostat, n.d.). The persistent housing shortage and soaring property prices have been central topics in public discourse for years in the Netherlands, particularly affecting young individuals entering the housing market for the first time (De Nederlandsche Bank, 2024). Despite the Netherlands boasting generous and liberal housing finance institutions, which facilitate easy access to mortgages, there is an observable trend indicating increasing difficulties for younger generations to purchase homes.

Secondly, in the past decade, the Netherlands has changed its tax policy regarding the donation of IWTs, allowing this to be an interesting case when it comes to observing the impact of state intervention. For two periods during the last decade, between 2013-2014 and between 2017-2023, parents had the opportunity to gift their children 100,000 euros tax free, contrary to the tax rate of 10% that was normally levied on gifts (Vermeulen, 2021). The goals of these changes were to boost homeownership and support children with their mortgages, but mostly impacted the accessibility of the housing market (Vermeulen, 2021). Even though the Netherlands is known for its generous housing finance institutions, this policy ensured that those without IWTs had a more difficult time purchasing a house compared to those who did receive IWTs.

This research will go into these two aspects of the Netherlands, analysing the development of the accessibility of the housing market over the past decade, and examining the impact of the aforementioned policy. This thesis adds to the literature on the relationship between IWTs and homeownership. In addition, the results are interesting for policymakers and politicians concerned about housing affordability and accessibility. The analysis could be a starting point for policies regarding IWTs, the promotion of homeownership, and taxation on donations and gifts.

The thesis is structured as follows. The first section reviews relevant literature on the topic and introduces the research question. The second section presents the theory used for the research and the hypotheses. Section three specifies the methodology and the research design and discusses the limitations of the methods. The fourth section presents the results of the analysis. Finally, the thesis will end with a conclusion that recaps the objective of the research, the main results, and looks ahead to future research.

Literature Review & Research

In this part, the thesis will dive into the concepts of wealth inequality, homeownership and IWTs and how these concepts are related in academic research. In addition, it will be highlighted how research explains differences between countries with regard to wealth inequality and homeownership ratios. Finally, the case of the Netherlands is introduced.

Concepts

Wealth Inequality

Research on income inequality has dominated the academic debate for several decades, but the interest in studying wealth inequality is relatively recent (Zucman, 2019). Notably, Piketty has been influential in this area, with numerous books and articles focusing on economic inequalities over the past 200 years (Piketty, 2014). Wealth is defined as the sum of all (non-) financial assets “over which households can enforce ownership rights and that provide economic benefits to their owners, net of any debts” (Zucman, 2019, pp. 4-5). Inequality of wealth is the extent to which these assets are evenly distributed in a society (IMF, n.d.). A common indicator of wealth inequality is the Gini coefficient, which portrays how much percent of all wealth is owned by what percentage of the population (IMG, n.d.).

Whereas some might argue that wealth inequality is a product of income inequality, we see that wealth is more unevenly distributed than income (Fuller et al., 2020). Some countries portray high levels of wealth inequality, but low levels of income inequality, such as the Netherlands or Sweden (OECD, 2021). The Netherlands shows the highest Gini coefficient for wealth inequality of all OECD countries, after the United States, while showing a much lower coefficient for income inequality (OECD, 2021). So, in search of the most important drivers of wealth inequality, one must look further than income. This leaves us with the question of which factors explain this disparity between wealth and income inequality. Skopek et al. (2014) argue that, in order to answer that question, one should focus on a range of national factors such as institutional arrangements, economic conditions, the importance of inheritances, and cultural and historical circumstances.

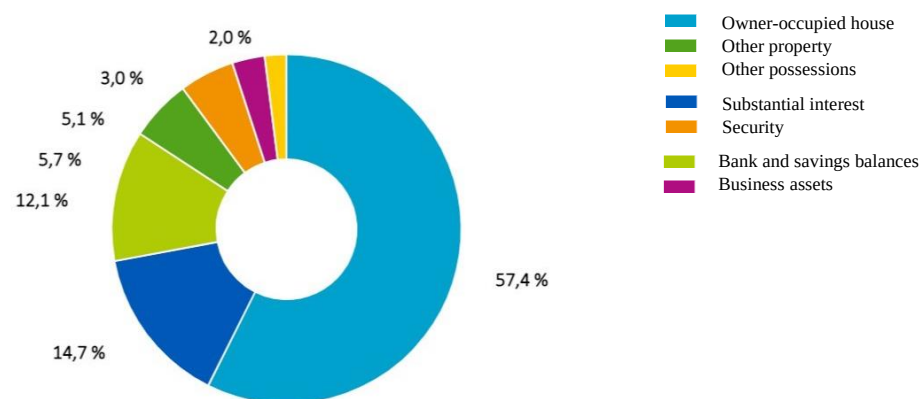
Homeownership

What appears to be one of the most important national drivers of wealth inequality, is homeownership rates (Martha et al., 2017). Wealth, being a broad concept, includes all the assets owned by an individual, such as financial assets like stocks and bonds, real estate, collectibles, or business ownership. For most people, however, homeownership is their most crucial asset, accounting for the majority of their wealth. For example, in 2020, 57.4% of all wealth in the Netherlands originated from housing, followed by 14.7% from substantial interests and 12.1% from savings (CBS, 2023), as shown in Figure 1. Research indicates that in all European countries, the net wealth of homeowners is significantly higher than that of non-owners (Martha et al., 2017). They note that “for most homeowners, the value of the household's main residence, resulting from the initial price, accrued capital gains from increased property prices, and depreciation or reinvestments, is regarded as the most valuable asset in the household wealth portfolio” (Martha et al., 2017, p. 1). In countries with low homeownership rates, fewer people generate wealth from housing, which increases wealth

disparities between groups in society. Additionally, Martha et al. (2017) demonstrate that differences in housing price evolution contribute to wealth inequality across European countries, showing that fluctuations in housing prices account for disparities in wealth (Martha et al., 2017). Kuhn and Grabka (2018) analyse Switzerland and Germany, two countries with relatively low homeownership rates, and show that predicted wealth for homeowners is much higher than for renters. They argue that this difference between owners and renters is progressively increasing over the years (Kuhn & Grabka, 2018). Furthermore, Di et al. (2007) found that homeowners have significantly higher wealth rates compared to renters, even during periods when stock returns were higher than average. Homeownership leads to increased wealth, “even during a period when alternative investments produced higher than normal returns and rents grew slowly” (Di et al., 2007, p. 274).

Figure 1

Structure of total assets Dutch households in 2020



Source: CBS. (2023). *Materiële Welvaart in Nederland* <https://longreads.cbs.nl/materiele-welvaart-in-nederland-2022/vermogen-van-huishoudens/>

As a result, it must come as no surprise that homeownership and wealth inequality are interconnected; meaning that a high rate of homeownership is commonly associated with a lower rate of wealth inequality (Kaas et al., 2019). However, one must take into account that institutional factors on a national level play a notable role – government policies can affect the importance of owning a house compared to other financial assets (Martha et al., 2017). Or, as Aalbers and Cristophers (2014) argue the role of housing is “heavily tied to the role of the state”. Therefore, there is a need to properly analyse and compare national institutional arrangements and government policies in order to better understand homeownership differences between countries.

Drivers of house ownership

Differences in country regimes

Generally – as in most welfare state domains – three pillars influence the housing market and its accessibility: the state, the market, and the family (Reviv & Lewin-Epsein, 2021). For

example, the famous welfare state regime typology created by Esping-Andersen (1990) is based on the role those three factors play in the provision of social security. In literature, various authors have aimed to create typologies based on these aspects to demonstrate different types of housing market regimes (DeWilde, 2017; Hoekstra, 2003; Schwartz & Seabrooke, 2008). Reviv and Lewin-Epstein (2021) have created such a typology based on earlier research and recent developments which is portrayed in table 1.

A **state-based system** typically has a highly controlled market with a strong and developed renters' market in countries such as Germany and Austria (Reviv & Lewin-Epstein, 2021). Mortgages are less accessible which results in low homeownership rates, especially among young adults, which leads to a higher buying age.

A **family-based system** is known for the importance of family support. Family-based regimes can be split up into family financial support regimes and family asset transfer regimes (Reviv & Lewin-Epstein, 2021). Countries that fall in the first category – France, Belgium, Finland, UK – are known for high financial transfers from parents to children. The authors argue that this is the result of a generous welfare state that leaves enough room for parents to make donations and gifts to their children (Reviv & Lewin-Epstein, 2021). The second family-based regime type is based on assets – for example, Greece and Italy. The renting market is expensive, and children are highly dependent on their parents' resources for finding housing. These resources often come in the form of housing assets and co-spaces and rarely in the form of financial aid.

Table 1
Housing market regimes

Regime	Characteristics	Country
<i>State-based Regime</i>	• Low homeownership rates • Developed renter's market • Inaccessible mortgages • Low IWT ratio	Germany, Australia
<i>Family Financial Support Regime</i>	• Generous welfare states • Generous mortgage market • Homeownership ratio is medium-high • IWTs in the form of financial aid.	France, Belgium, Finland, UK
<i>Family Asset Support Regime</i>	• Very weak renting market • Mortgages are inaccessible • Homeownership rates are high • IWT in the form of assets / co-space.	Italy, Greece
<i>Market-based Regime</i>	• Very high mortgage accessibility • Expected high homeownership rate • Low IWT ratio	Netherlands, Denmark, Sweden, Iceland
<i>Post-communist Regime</i>	• Very high homeownership ratios • Low mortgages • IWTs in the form of assets.	Estonia, Hungary, Poland, Slovenia

A **market-based system** promotes the importance of the market, with typically very liberal housing finance institutions and high mortgage accessibility, stimulating homeownership among citizens (Reviv & Lewin-Epstein, 2021). The authors describe that these countries are associated with low levels of family support in the form of assets as well as in the form of gifts. The age to buy a house is relatively low and mortgages are very high compared to other European countries.

Lastly, most Eastern European countries belong to the **post-communist regime** which displays extremely high homeownership rates with low mortgages. The homeownership rates are high as a result of the fall of the communist regime, and IWTs happen but only in the form of assets.

Role of IWTs

As family is one of the factors influencing housing accessibility, parental support can be a driver of homeownership. This support, in the form of IWTs, can impact individuals' chances on the likelihood of becoming a homeowner. The extent to which IWTs impact homeownership is dependent on the housing regime. Reviv and Lewin-Epstein (2021) write that "IWT is a mechanism of social reproduction with respect to the accumulation of future wealth" and that "the importance of the family with respect to housing tenure varies across countries with different institutional arrangements." (Reviv & Lewin-Epstein, 2021, p. 410).

Australian research shows how IWTs lead to an increased likelihood of homeownership and how the type of IWT plays a role (Barret et al., 2015). For example, the impact of gifts is higher than the impact of inheritances, as gifts are typically received earlier in the life cycle. The earlier an individual receives the IWT, the more likely it is that the IWT has a positive impact on homeownership (Barret et al., 2015). Research on Anglo-Saxon countries – the United Kingdom and the United States – argues how IWT-receivers are connected to a higher down payment and a higher housing value compared to non-receivers (Engelhard & Mayer, 1998). They also show how individuals spend less time on saving for a down payment, which is also supported by Guiso and Japelli (2002). Luea (2008) adds to this research by finding that receivers have a higher average house burden and that the value of the gift has a positive impact on homeownership. In other words, the higher the gift received, the more likely it is that the individual becomes a homeowner, controlled for all other factors (Luea, 2008). In France too, those who have received an IWT correspond to a higher down payment and a higher value of the house (Spilerman & Wolff, 2012). However, research on Danish households does not show any conclusive results on the impact of IWTs on homeownership rates, because of the generous government transfer schemes (Kolodziejczyk & Leth-Petersen, 2013).

So, in most cases receiving IWTs has a positive influence on the likelihood of becoming a homeowner, however, research has shown that various housing regimes change how this impact works out in reality. Especially in regimes in which a high down payment is required, IWTs are used by receivers to cover those payments. These individuals are therefore able to purchase a house earlier in life since they do not need as much time to save for the down payments. In regimes with the most generous housing finance systems – for example the state-based regime – buyers are able to lend up to 100% of the housing value and do not require a down payment. As a result, receiving an IWT in those countries is not as impactful compared to others, which could explain the results of the Danish research. The literature indicates too

that the age at which the IWT is received matters quite a lot for its impact on homeownership. The earlier the IWT, the more impact the IWT has on homeownership likelihood.

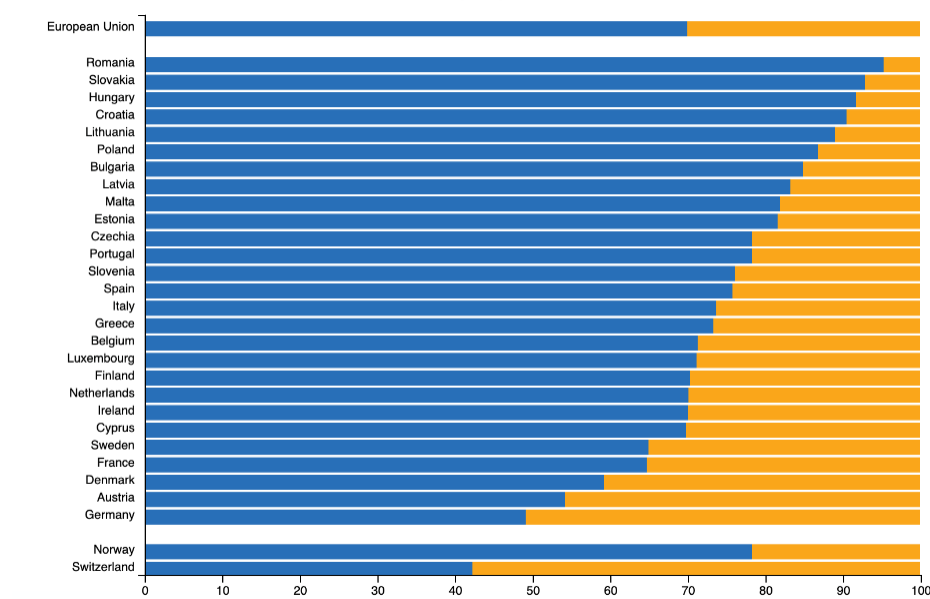
Naturally, besides the institutional factors, other mechanisms play a role as well. Besides government institutions and regimes, policy changes can also affect giving and receiving IWT. There is for example the taxation on IWTs. Wealth taxation takes many forms and varies per country, but what is clear is that people respond to changes in the taxation of IWTs (Kopczuk, 2013). One can imagine that changing to a more generous tax system with regard to IWTs will increase the value of IWTs donated in a country. At the same time, we know that higher values of IWTs lead to higher levels of wealth inequality (Kopczuk, 2013). Therefore, it is important to understand the taxation scheme of IWTs, since this might influence the prevalence of IWTs.

Market-based regime & the Netherlands

The Netherlands—the case examined in this thesis—is classified as a market-based regime with liberal housing finance institutions, a controlled rental market, and high homeownership rates (Raviv & Lewin-Epstein, 2021). In such regimes, it is generally expected to be relatively easy to access financial instruments for purchasing a house, increasing the possibility for a broad segment of society to become homeowners. However, there is a discrepancy in this argument. When examining countries with liberal financial institutions, these are not necessarily the ones with high homeownership rates, as illustrated in Figure 2. The Netherlands, Sweden, and Denmark are categorized as market-based regimes, yet the graph shows that these countries fall below the European average for homeownership rates. Furthermore, wealth inequality – possibly resulting from a gap in homeownership – is quite high in these countries (OECD, 2021).

Figure 2

Homeownership versus renting rates in European countries



Source: European Commission. (2022). House or flat – owning or renting. Retrieved from: <https://ec.europa.eu/eurostat/cache/digpub/housing/bloc-1a.html>

Apparently, generous financial institutions – aimed at increasing homeownership rates and making the housing market accessible to all – have a reversed effect (Raviv & Hinz, 2022). In the conclusion of their work, Raviv and Hinz (2022) offer a possible mechanism for this discrepancy. They argue that the generosity of financial institutions is driving housing prices up because individuals can secure higher mortgages, enabling them to purchase more expensive homes. Consequently, young adults with wealthy parents often rely on parental assistance to finance a house, further inflating prices. These trends exacerbate wealth inequality as individuals increasingly depend on parental wealth. Those who receive donations from their parents can afford either more expensive homes or purchase at an earlier age compared to peers with similar incomes but without parental assistance. Therefore, progressive mortgage markets not only enable young adults to maintain and inherit parental wealth but also contribute to the widening wealth gap between older and current generations of young adults (Raviv & Hinz, 2022). In other words, IWTs in this regime leads to a less accessible housing market in various ways: the prices of houses increase, the age to buy a first house increased, and the chance that a receiver buys a house increases.

Moreover, this aligns with the notion that the primary determinant of wealth inequality concerning homeownership appears to be the accessibility of the housing market relative to median income (Kaas et al., 2019). When analysing homeownership rates among households below the median income, significant variations are observable between countries. While the homeownership rate for the top 50% of wealthy households remains relatively consistent, cross-country variations primarily arise from differences among households in the lower half of the income spectrum (Kaas et al., 2019). This is logical because there will always be a segment of society capable of purchasing a house, even when other factors such as a tightening housing market or dwindling housing supply make it increasingly challenging. However, the most vulnerable group comprises those who can afford a house under favourable circumstances but struggle to secure housing under adverse conditions. Contrary to intuition, government policies focused on liberalizing financial institutions do not necessarily enhance accessibility, as outlined in the previous section.

The case of the Netherlands

This research will focus on the Netherlands since it is a country that shows several counterintuitive trends. Firstly, the gap between wealth and income inequality is relatively large, showing a high Gini coefficient for wealth inequality whilst preserving relatively low-income inequality (Centraal Planbureau, 2023). Secondly, even though the Netherlands is renowned for its liberal housing finance instructions, the country does not show exceptionally high homeownership rates (Eurostat, 2021). Thirdly, the Netherlands has displayed an increasingly tightening housing market, while experimenting with policies that change the taxation levied on donations made to children (IWTs). These policies are an extra dimension that allows the researcher to analyse to what extent policies with regard to IWT taxation influence the housing market.

This research builds on the existing literature regarding wealth inequality, homeownership, the significance of housing policies, and housing market regimes. This thesis focuses on the IWTs in a generous housing finance system. It counters the idea that a market-

based system in which a generous housing finance system prevails would lead to high homeownership rates and housing accessibility. Furthermore, it shows how IWTs have a significant effect on accessing homeownership and on the development of intergenerational wealth inequality.

Development of the Dutch housing market

Before delving into the contemporary status of the Dutch housing market, it is essential to reflect on the historical and cultural factors shaping the modern-day operations of housing regulations. In the immediate aftermath of the Second World War, the Netherlands faced a housing shortage, leading to the construction of two million houses between 1945 and 1970 (Verwaaij, 2018). The government encouraged citizens to become homeowners by liberalizing mortgage regulations and raising public awareness about the advantages of homeownership. Banks offered higher loans at lower interest rates, leading to a shift in public perception; owning a house became a part of adulthood. However, as homeownership rates increased, so did housing prices. The oil crisis in 1979 further impacted the Dutch economy, resulting in a decrease in public purchasing power while mortgage interest rates rose. This period disproportionately affected low-income citizens, resulting in a 45% decrease in housing prices. In response, policymakers focused on implementing risk-diminishing policies to prevent such economic downturns in the future (Verwaaij, 2018).

Despite these efforts, housing shortages persisted, particularly for middle-class families, leading to an increase in prices. Homeownership remained culturally relevant, with young people aspiring to own a home. Financial incentives, such as tax rebates on mortgage interest, made investing in housing financially and fiscally appealing. This trend continued until 2008 when the Global Financial Crisis (GFC) unfolded, causing housing prices to decline once again. Dutch politicians responded by tightening mortgage regulations, inadvertently reducing housing affordability. Notwithstanding these challenges, the housing market experienced an overall increase in average prices and the home price-to-income ratio. This ratio, indicating the percentage of one's income spent on housing, demonstrated that housing prices escalated more rapidly than incomes (Verwaaij, 2018).

In essence, one can conclude that in the Netherlands it is culturally relevant to become a homeowner as well as it is financially significant. With the average housing price climbing from 100.000 euros in 1995 to 430.000 euros in 2022, it is no surprise that the housing market has helped a part of society gain wealth over time. Especially once this is combined with the fiscal advantages homeowners receive - such as the tax rebate on mortgage interest or the tax-free surplus value of houses - homeownership becomes the key to increasing wealth for individuals over time (Statista, n.d.).

Theoretical Framework

In this section, the theoretical rationale behind the hypotheses will be explained. The analysis is split up into two parts: the impact of IWTs on the accessibility of the housing market and the impact of the tax-free donation policy.

Expectations of IWTs and homeownership accessibility

In terms of IWT and the accessibility of the housing market, the literature review identified three relevant factors. Firstly, researchers looked at the impact of IWTs on homeownership rates. Secondly, the literature showed an important effect of the age at which the IWT is received. Thirdly, receiving an IWT is supposed to be correlated with a higher value of the house. These three factors will be analysed in this thesis to evaluate the accessibility of the housing market. The first expectation is that receiving an IWT positively affects the likelihood of becoming a homeowner. This hypothesis is supported by earlier studies conducted in different countries, such as the United Kingdom and Australia (Blanden et al., 2021; ViforJ et al., 2022). Even though these countries have different institutional settings and housing market structures than the Netherlands, the underlying mechanism of the hypothesis is comparable. If one compares two identical individuals with the same personal circumstances in the same environment and one receives a gift, the receiver will likely have a higher chance of becoming a homeowner compared to the non-receiver because his income has increased. The individual now has the possibility – as a result of the received IWT – to buy a house, whereas for the non-receiver this was not yet achievable. Consequently, the first hypothesis reads as follows:

H₁ : Receiving IWTs in the Netherlands has a positive effect on the likelihood of becoming a homeowner.

The second important aspect is the age at which an individual receives an IWT. The impact of an IWT is likely greater when an individual is younger (Barret et al., 2015). As people age, their income typically increases, making them more likely to have already bought a house and accumulated wealth. Thus, receiving an IWT is expected to have a more significant positive impact on becoming a homeowner at age 25 compared to age 50. Raviv and Lewin-Epstein (2021) identify the Netherlands as a part of the market-based system, characterized by generous housing-finance institutions and a controlled rental market. In the Netherlands, young individuals often leave their parental home at a relatively young age and start renting before they can afford to buy a house. Receiving an IWT during this period can create a bridge for those who can buy a home earlier compared to those who cannot yet afford it.

H₂ : As an individual gets older, the positive effect of IWTs on the likelihood of becoming a homeowner decreases.

Regarding the value of houses purchased by recipients of IWTs, it is expected that these homes are more expensive compared to those bought by individuals who did not receive an IWT (Barrett et al., 2015; Engelhard & Mayer, 1998; Luea 2008). In the Netherlands, individuals usually acquire a mortgage proportional to their income. Mortgage accessibility is high and down payments are often very low compared to other countries. Receiving a gift from parents can lead to three possible outcomes: the individual purchases the same house they would have but with a lower mortgage, the individual purchases a more expensive house with a higher mortgage, given the additional resources, or the individual buys the house at a younger age compared to non-receivers. The research until now tells us that individuals with an IWT are

more likely to buy a house with a higher value (Barrett et al., 2015; Engelhard & Mayer, 1998; Luea 2008). Consequently, the expectation is that individuals who receive a gift are likely to purchase more expensive houses compared to those who do not receive a gift. As a result, housing prices may rise as the demand for more expensive houses increases.

H₃ : Individuals who receive IWTs are more likely to buy a more expensive house compared to individuals who do not receive IWTs.

Expectations of policy changes on homeownership accessibility

In addition to examining the effects of IWTs on the accessibility of the Dutch housing market, this thesis will also focus on the temporal dimension. Over the past decade, the Dutch government has modified the taxation of IWTs twice, each time with different goals. Until 2010, parents could donate up to 50,000 euros tax-free to a child for purchasing a house. In 2013 and 2014, this amount was temporarily increased to 100,000 euros to stimulate demand in the housing market, as the country was still recovering from the financial crisis (Vermeulen et al., 2021). Since this regulation was temporary, it lapsed in 2015 and 2016. However, it was reinstated in 2017 with a different objective: to address the issue of underwater mortgages, where mortgage amounts exceed the value of the house. The rationale behind this policy was that parental donations could alleviate the mortgage burden of their children; however, research indicates that this goal was not achieved (Vermeulen et al., 2021; Li & Mastrogiacomo, 2022).

These policy changes serve as a case study to observe their effects on the housing market. It is expected that increasing the tax-free donation cap will lead to more and higher IWTs from parents to children. Assuming that receiving IWTs indeed leads to better prospects in the housing market (as investigated in Hypotheses 1, 2, and 3), it is expected that this policy change would have a disequilibrating effect. The policy allows parents to donate more without paying taxes, which means children receive more and have an even higher likelihood of becoming homeowners than before the policy change. This increased likelihood widens the gap between receivers and non-receivers, thus increasing inequality in the housing market.

For this last hypothesis, the research will compare the years when the tax-free policy was implemented (2013, 2014, 2017, 2018, 2019, 2020, 2021, 2022, 2023) to the years when the policy was not present. If these years show a higher coefficient for the impact of IWTs on homeownership, it suggests that the policy indeed had affected the importance of IWTs.

H₄: Receiving a IWTs becomes more important to become a homeowner in a tax regime with tax-free donation policies, compared to a regime where donations are taxed.

Methodology & Research Design

In order to properly answer the research question and investigate the hypotheses as outlined earlier, a quantitative research approach is chosen. This approach is most appropriate as it allows us to analyse thousands of individuals and their financial status over the years, which gives a good basis for analysing the effects of IWTs. The fundamental dataset used is the LISS Panel dataset with extensive data from Dutch households. The dataset consists of yearly questionnaires on a variety of topics ranging from income, assets, political opinions, and housing characteristics. The panel structure of the data allows the researcher to observe the development of these variables across different households and over multiple years and, therefore perfectly suitable for the purposes of this research (Angrist & Pischke, 2014). This dataset is complemented with data from the DHS Dataset, a similar panel-structured dataset with information on Dutch households. In addition, supplementary data from Eurostat is used to retrieve data on macro-economic trends which can be used as control variables in the research.

Operationalization

As the dataset was categorized by topic and by year, the first step was to properly append and merge the datasets with all the appropriate variables. The relevant variables are those that match the various concepts used in this research.

The concept of **homeownership** is defined as whether someone owns a house (has bought a house) or rents a house. This concept was retrieved from the variable `cd22o003` and asked the respondents whether they are the owner of the house, a tenant, a sub-tenant, or something else. For the analysis this variable was transformed into a dummy variable that stated whether someone was a homeowner (1) or not (0).

The second important concept is the **IWT**. In this thesis, an IWT is operationalized as an inheritance or a gift, received by the individual. In the original dataset, this variable had a value of 1 only in the years that an inheritance or gift was received. This was amended to ensure the value was 1 from the moment the individual received an IWT onwards. In addition, for the third model, we used the lagged impact of having received an IWT, this will be further explained in the next section.

Furthermore, the research looks at the **age** at which the individual has received the IWT. This was derived from the birth year of the individual and the year in which the individual received the IWT.

Lastly, the **value of the house** is taken into account. As the research deals with observations from individuals, the value of the house variable is not always precise. For this variable, we depend on the knowledge individuals have of their house and the value of it. For this concept, multiple options were possible, such as the purchasing price of the house, the estimated housing value, or the WOZ value of the house. This research will use the WOZ value. WOZ stands for *Waardering Ontroerende Zaken* and is determined by the municipality in which the house is located. The municipality appraises the value of the house and based on that value the household is obliged to pay certain municipal taxes. Because the WOZ value is estimated every year, it gives a useful indication of the value of the house reflecting

developments in the housing market and the economy in general. In addition, the WOZ value is more reliable than the market value as identified by an individual, as individuals base the market value on different factors. So, this would not be a very stable and comparable variable. Purchasing price only says something about the value of the house when it was bought and remains the same when years pass by. The purchasing price is constant for an individual over several years and will therefore be captured by the fixed effects that are used in the models. Conclusively, the WOZ-value is the most appropriate variable for the aims of this research.

Regression Model

The thesis uses four regression models, and each of them is meant to test the matching hypothesis. The following sections present these models.

Model 1

The first hypothesis researches the effect IWTs have on homeownership. IWT is identified as the variable inheritance and indicates whether or not the individual has received an inheritance or gift. In the original dataset, the question was whether an individual received an inheritance or gift in that year, leading to a situation in which individual A had a positive value for IWT in 2012 but not in 2013 and onwards. To take care of this, an extra variable was constructed that gave the individual a positive value for IWT from the moment they received the inheritance onwards. Homeownership is a binary variable and indicates whether the person is an owner or a renter. The panel-structured regression model allows the researcher to analyse the data from many individuals while tracking the same individuals over the years. Fixed effects are added to the estimation (α in the equation) because a fixed effects panel model accounts for individual-specific effects that are constant over time, such as gender, birth year, or educational attainment. These fixed effects allow the isolation of the effect of the independent variable on the dependent variable whilst holding individual-specific characteristics constant (Best & Wolf, 2014). In addition, various control variables (that are not captured by the fixed effects) are added, such as age, the log of income, the housing price index, and the interest rate. The latter two variables are retrieved from Eurostat and are similar for all observations from the same year. These variables capture macroeconomic effects to make sure that changes in homeownership are in fact a result of IWTs and not of other trends. For age, the model uses the linear and squared terms because this allows us to capture a potential non-linear relationship between age and homeownership. The logarithm of income is chosen instead of the initial income data, because the logarithm reduces skewness, as there are some people in the dataset whose income is disproportionally high. Therefore, the logarithm is a better fit in the model. Lastly, the model focuses on the labour market population (18 until 66). According to the hypothesis, this equation should show a positive coefficient for IWT indicating that receiving an IWT increases the likelihood of becoming a homeowner.

$$\text{Model 1: } Owner = \alpha + \beta_1 IWT + \beta_2 Age + \beta_3 Age^2 + \beta_4 \log(income) + \beta_5 HPI + \beta_6 InterestRate + \epsilon$$

Model 2

The second model estimates how the effects of IWTs on homeownership change when the age at which the IWT is received changes. For this hypothesis, a similar model as described above is used, however an interaction effect is added between IWT and age. The interaction effect includes a linear and quadratic term of age to allow for a potentially non-linear relationship.

$$\text{Model 2: } Owner = \alpha + \beta_1 IWT + \beta_2 Age + \beta_3 Age^2 + \beta_4 \log(income) + \beta_5 HPI + \beta_6 InterestRate + \beta_7 (IWT \times Age) + \beta_8 (IWT \times Age^2) + \epsilon$$

In this model one should specifically look at the coefficient of the interaction effect, since this coefficient captures the effect of the age on which one receives an inheritance or gift on the likelihood of becoming an owner.

Model 3

The third hypothesis requires a somewhat different model as it uses a different dependent variable. This model assesses how receiving an IWT impacts the value of a purchased house, comparing those who received an IWT with those who did not. To analyse this impact, we use the logarithm of the WOZ-value because it adjusts for the uneven distribution of housing prices. Some houses have exceptionally high prices compared to the average, and using the logarithm helps the variable better fit the model by addressing outliers. The inheritance variable is slightly modified compared to previous models. In earlier models, "inheritance" was assigned a value of 1 for the year of receipt and all subsequent years. In this model, the "inheritance" variable is assigned a positive value for the year of receipt and the following two years. This adjustment accounts for the possibility that purchasing a house with inherited money may not occur immediately but may have a delayed impact of two years. Additionally, a condition is imposed to analyse only observations where the house was purchased in the year prior, to ensure we are estimating the effect of a house bought shortly after receiving an IWT, rather than a house purchased many years ago. Then again, the linear and squared terms for age are added to account for a non-linear relationship with age and the model is restricted to working age population. The macroeconomic variables (housing price index and interest rate) are excluded in this model because these effects are already captured by the fixed effects. The housing price index and interest rate do not vary over time within the panel and therefore do not provide any additional information, besides what is already shown with the fixed effects.

$$\text{Model 3: } \log(WOZ) = \alpha + \beta_1 IWT + \beta_2 Age + \beta_3 Age^2 + \beta_4 \log(income) + \epsilon$$

The hypothesis expects a positive coefficient, indicating that receiving an inheritance or gift led to individuals purchasing more expensive houses compared to those without a gift.

Model 4

Finally, the fourth model compares the years with a tax-free donation policy (up to 100.000 euros) to years without this policy. The interaction effect of a tax-free variable (1 for all the years in which the policy was active and 0 for the years in which the policy was inactive) and inheritance shows the researcher how the impact varied in the different regimes. A positive coefficient indicates that in the years in which the tax-free donation policy was present, the

impact of receiving an IWT was bigger compared to the other years. The control variables remain the same as in the previous models.

$$\text{Model 4: } Owner = \alpha + \beta_1 IWT + \beta_2 PolicyChange + \beta_3 Age + \beta_4 Age^2 + \beta_5 (IWT \times PolicyChange) + \beta_6 \log(income) + \beta_7 HPI + \beta_8 InterestRate + \epsilon$$

Another way to capture the temporal effect would be by adding an interaction effect of IWT and year, to see how the coefficients vary and develop over the years. However, in such a case it would be impossible to control for the macroeconomic statistics (housing price index and interest rate) because these statistics confound with the year variable. This perhaps would not matter as much if the housing price index and interest rate had no effect; however, by adding the interaction effect of these statistics we do see that there is some macro-economic effect visible. This is the reason why the individual year effects are not included in this analysis; however, the above-mentioned consideration can be found in the appendix as a robustness check.

Limitations

The most important limitation of panel data regression analysis is the fact the housing market is a complicated phenomenon in which quite a lot of factors play a role. Unfortunately, it is impossible to take all these factors into account when analysing trends regarding for example buying age, WOZ value, and homeownership rates. Controlling for some macro-economic statistics, housing price index and interest rate, allows us to capture some trends in the housing market; however, there might still be factors that have not been included in the research. For example, an often-posed explanation for the tightening housing market in the Netherlands is the lack of mobility between houses (Verwaaij, 2023). A stagnant mobility decreases the chances for first-time buyers to be able to enter the housing market as the supply of houses is relatively low, especially when the construction of new houses pace with the demand for housing. Other demographic developments, such as increasing immigration, further increase demand while supply lags.

Furthermore, in the 18 years that are observed in this research, far more policies have been implemented in the Netherlands, that might have influenced individuals' positions in the housing market as well. An example is the mortgage interest reduction policy, which allows households to subtract the interest they pay over their mortgage from their taxable income (Van Tilburg, 2021). One of the effects of this policy was that households were able to take on a higher mortgage, which has led to rising housing prices as well. This mortgage interest reduction is slowly being phased out by the government to counter that trend, however, that leads to a fiscal advantage for those who already were a homeowner (older generations) compared to first-time buyers (Noorlag, 2024). Another interesting policy is the property transfer tax, a tax that is paid when purchasing a house. The government implemented a temporary exemption from this tax for first-time buyers to favour this group when purchasing a house (CBS, 2022). A result of this exemption could be that it was easier again for these buyers to purchase a house; or that they delayed their purchase with the knowledge that the exemption was coming. Finally, the research is dependent on survey data, meaning data provided by individuals themselves. In some cases, this leads to inaccurate data on for example

housing prices and income. While cleaning the dataset, most of these irregularities were taken care of, however, the dataset is still based on the individual portrayal of one's situation.

To summarize, the housing market is complicated and numerous factors play a role. Whether it is macroeconomic developments, demographic changes, or institutional changes, these all influence the housing market in their own way which makes it challenging to pinpoint the effects of one specific policy. Unfortunately, it is outside the scope of this research to incorporate all these policy changes and developments, however, identifying these gives the reader an idea of several factors that are present.

Results

In this part, the results will be presented of the statistical models as described before. First, the analysis will go into various descriptive statistics and trends that help to understand how relevant variables have developed over the years. This will be followed by the explanatory statistical models that were laid out in the previous section.

Descriptives and trends

As the housing market is a complicated construct with several factors playing an important role, it is important to visualize some major trends that have been observable over the last years. This will also allow us to examine how the relevant variables developed.

IWTs

The starting point is analysing how the IWTs have developed over the years. The data shows that IWTs have increased in amount and in number, so more people have received gifts, and the value of the gifts was increasingly higher. In addition, descriptive statistics from the LISS dataset show how individuals who have received a gift with the goal to purchase a house have increased. In the figure below you find the development of individuals who received a gift to finance their house. After a sharp decline between 2006 and 2008, the rate is increasing slowly, with an explicit increase between 2016 and 2018. When looking at the value of the gifts, there is also an increasing trend observable, with the average value quadrupling between 2005 and 2023.

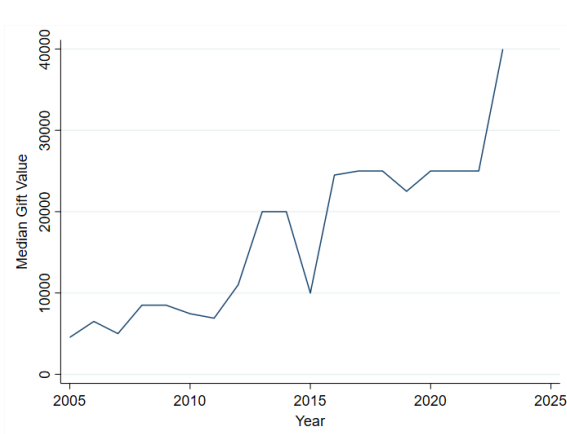
Figure 3

The rate of IWT receivers



Figure 4

The median received gift

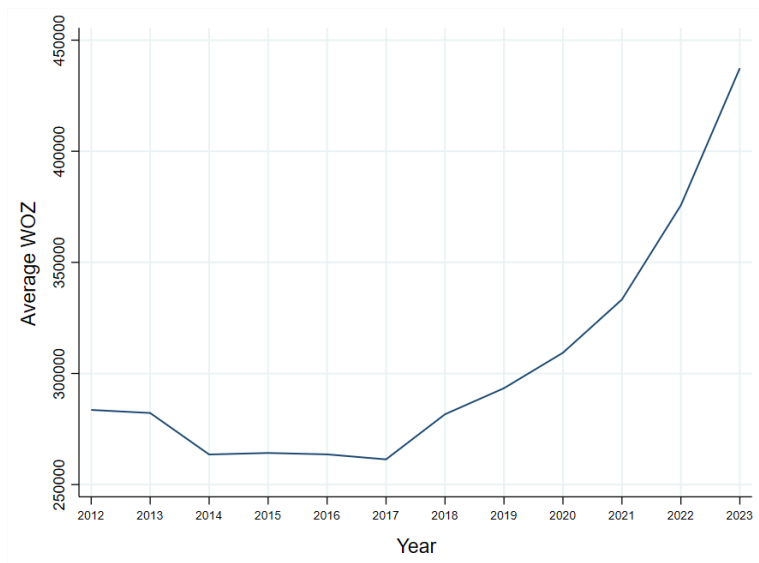


Housing prices

The housing prices are an important statistic as it says something about the accessibility of the housing market. Higher housing prices indicate a less accessible housing market as it becomes more difficult to generate financing for the house. In figure 5, the development of the average WOZ value is displayed. The development of the market value and housing price index show similar trends which indicates that these variables are comparable (see appendix).

Figure 5

Average WOZ over time



As expected, there has been a considerable increase in housing values over the years. Between 2012 and 2023 the values increase by 54,2%. However, naturally, this does not say everything about the accessibility of the housing market. In the end, it is also about how much households spend on their houses that distinguishes the accessibility. But, when we compute the increase in net household income, which shows an increase of 26,6% we see that housing prices have disproportionally grown over the past decade (CBS, 2024).

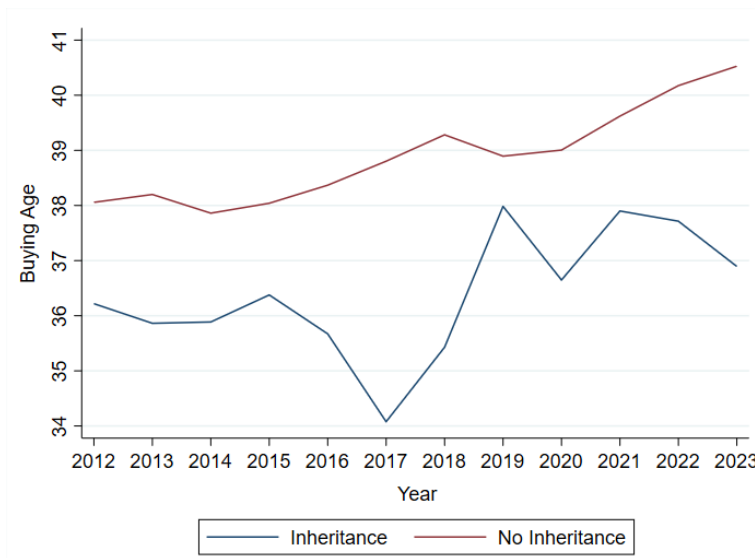
Buying age

A third important statistic on market accessibility is the age at which people buy a house. As outlined earlier in this research, buying age can be quite influential for the development of intragenerational wealth inequality. Homeownership can be a very influential determinant for the generation of wealth further in life, so the earlier someone buys a house, the easier it will be for them to acquire wealth. In an accessible housing market with liberal housing market institutions – such as the Netherlands – we could expect a younger age compared to stricter countries. The data show an increase in average buying age, and this corresponds to what earlier research has found (CBS, 2022). However, particularly interesting is to look at how various groups have developed over the years. Figure 6 shows the average age at which individuals bought their current house and compares the groups who received an IWT and the groups who did not receive an IWT.

The graph illustrates a striking difference in the age at which individuals purchase homes between those who receive an IWT and those who do not. Despite the overall trend of increasing buying age, the gap between receivers and non-receivers persists and may even be widening. A particularly noteworthy observation is the marked decline in the buying age of IWT recipients in 2017. During this year, the buying age for these individuals was noticeably lower compared to other years, while non-receivers continued to follow the expected trend.

Figure 6

Average buying age of individuals with or without an IWT



This suggests that an external factor specifically influenced the buying age of individuals receiving IWTs in 2017. The graph highlights the impact of the policy implemented in 2017 on the buying age of these individuals. It appears that a greater number of children received gifts during this period, aligning with the data on IWTs. This influx of gifts likely contributed to a higher homeownership rate among younger individuals. Consequently, the policy change facilitated earlier entry into the housing market for IWT recipients, reflecting a significant shift in home buying behaviour influenced by policy changes.

Statistical Analysis

The trends described above represent the development of the accessibility of the housing market. This part will go into the explanatory model as defined in the methodology section. Table 2 shows the results of the first two models. Column 1 corresponds to the first model and presents the result of the effect of receiving an IWT on the likelihood of being a homeowner. The positive significant coefficient indicates a positive relationship between IWTs and homeownership; meaning that those who have received an IWT have a higher likelihood of becoming a homeowner. In addition, the significant coefficients for age and the log of income show a positive relationship on ownership as well. So, older individuals and higher-paid individuals are more likely to be homeowner. The coefficients for the housing price index and interest rate are insignificant. Therefore, the research shows how the variance in becoming a homeowner is a result of individual factors, not a result of shifts in housing prices and interest rates.

Table 2*Models 1 & 2: Effects of receiving an IWT on homeownership*

	Model 1	Model 2
IWT	0.0533*** (0.00554)	0.363*** (0.0660)
Age	0.0571*** (0.00216)	0.0547*** (0.00230)
Age ²	-0.000547*** (0.0000181)	-0.000518*** (0.00002)
IWT x Age	-	-0.0105*** (0.00292)
IWT x Age ²	-	0.0000817** (0.0000311)
Income (Log)	0.0156*** (0.00172)	0.0155*** (0.00172)
Housing Price Index	0.000192 (0.000138)	0.000209 (0.000138)
Interest Rate	0.000392 (0.00144)	0.000589 (0.00144)
Intercept	-0.868*** (0.0594)	-0.825*** (0.0616)
Observations	26554	26554
Fixed effects (Household)	6241	6241
R ²		
Within	0.0727	0.0752
Between	0.1395	0.1390
Overall	0.1040	0.1028
Prob < F	0.0000	0.0000

Note: standard error in brackets. The most significant level has a p-value ≤ 0.001 and is indicated with three stars (***). P-value ≤ 0.01 is indicated with two stars (**). A p-value ≤ 0.05 is indicated with one star (*). A p-value > 0.05 is considered an insignificant effect.

The second column presents the results of the second model which analyses the effect of the age at which the IWT is received on the likelihood of being a homeowner. This column shows similar results to the first model; however, the interaction effects of IWT and age are added. The coefficient is negative and significant, but to better understand its meaning, one should look at the figure 7.

Figure 7 helps to visualize the interaction effect as presented in the table. On the y-axis one can see the effects of receiving an IWT on becoming a homeowner and on the x-axis one can see the age of the individual. The younger an individual is, the higher the coefficient is. So, receiving an IWT for a 20-year-old individual is much more impactful than receiving it when someone is 50. The steepness of the line decreases and eventually stabilizes, indicating that the difference in effects is higher for younger individuals compared to older individuals. In other words, when comparing someone aged 20 to someone aged 30, the difference in the impact of receiving an IWT is relatively large. However, when comparing someone aged 50 to someone aged 60, that difference is much smaller. These results are pretty intuitive, as it is plausible that older individuals are likely to have bought a house already, and that an inheritance or gift will probably be used for other purposes. In the second column too, the effects of housing price index and interest rates are not significant, so the variation in homeownership can be attributed to individual characteristics.

Figure 7

Average marginal effects of receiving an IWT over age (95% CI)

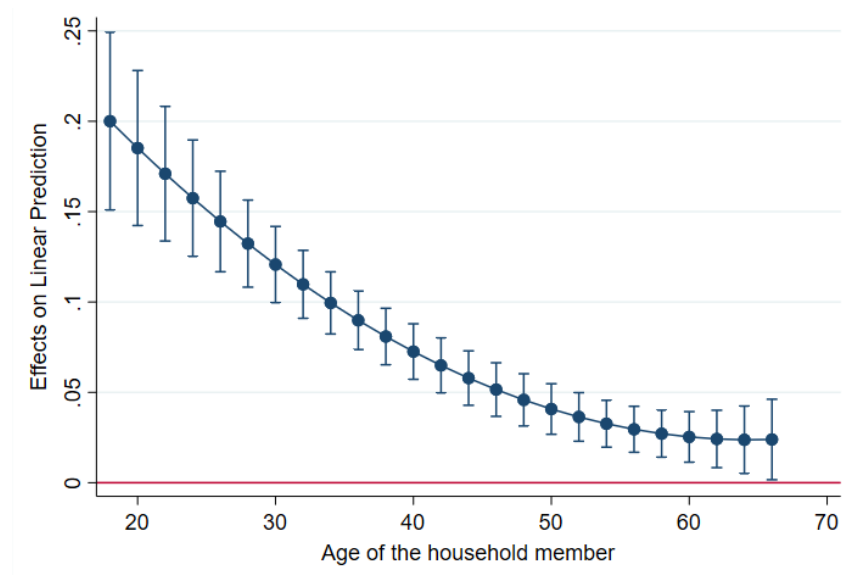


Table 3 show the results of the third model; the effect of IWTs on the WOZ value. The result is significant, however negative. This means that having received an IWT results in a slight decrease in WOZ-value. Age and income – just like in the previous models – are positive and significant. The hypothesized effect of IWT on housing value was positive, because the mechanism said that individuals have more money to spend on a house when they receive an IWT. It seems now, that inheritances and gifts do have impact on the likelihood of becoming a homeowner in general, but not so much in the price of the house that an individual eventually buys.

Table 3

Model 3: Effects of receiving an IWT on WOZ

	WOZ-Value (Log)
IWT	-0.107 * (0.0487)
Age	0.0481 *** (0.0132)
Age ²	-0.000486 *** (0.000151)
Income (Log)	0.01631 *** (0.0260)
Intercept	10.129*** (0.330)
Observations	503
Fixed effects (Year)	12
R ²	
Within	0.1293
Between	0.5869
Overall	0.1531
Prob < F	0.0000

Note: standard error in brackets. The most significant level has a p-value ≤ 0.001 and is indicated with three stars (***). P-value ≤ 0.01 is indicated with two stars (**). A p-value ≤ 0.05 is indicated with one star (*). A p-value > 0.05 is considered an insignificant effect.

Table 4*Model 4: Effects of receiving an IWT on homeownership*

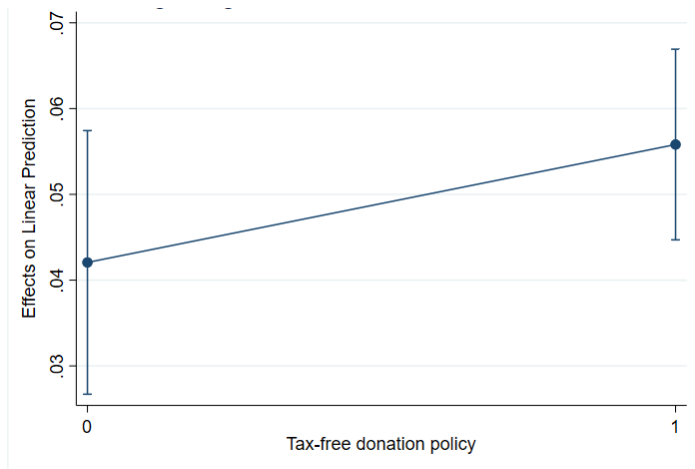
	Homeownership
IWT	0.0421*** (0.00784)
Tax-free donation years	0.000571 (0.00287)
IWT x Tax-free donation years	0.0137* (0.00673)
Age	0.0570 *** (0.00218)
Age ²	-0.000547 *** (0.0000181)
Log Income	0.0156*** (0.00172)
Housing Price Index	0.000183 (0.000140)
Interest Rate	0.000169 (0.00147)
Intercept	-0.862*** (0.0607)
Observations	26554
Fixed effects (Household)	6241
R ²	
Within	0.0730
Between	0.1398
Overall	0.1043
Prob < F	0.0000

Note: standard error in brackets. The most significant level has a p-value ≤ 0.001 and is indicated with three stars (***). P-value ≤ 0.01 is indicated with two stars (**). A p-value ≤ 0.05 is indicated with one star (*). A p-value > 0.05 is considered an insignificant effect.

Finally, table 4 shows the results of the fourth model that incorporates the temporal dimension to observe the effect of tax-free donation policy. Especially important in this table is the interaction effect of IWT and tax-free donation years. This interaction effect is positive and significant and means that receiving an IWT during the tax-free donation years had a higher impact on homeownership compared to the years in which there was no tax-free policy. This might sound abstract but figure 8 visualizes this interaction effect. On the x-axis one can see the value of 0 and 1, 1 corresponding to the years during which there was a policy that allowed tax-free donations and 0 corresponding to the years without this policy. The y-axis displays the effect of receiving an IWT on homeownership. The increase between 0 and 1 means that the effect of receiving an IWT is bigger in the years when the tax-free donation policy was in place.

Figure 8

Average marginal effect of IWT over policy regime (95% CI)



Discussion

In this final part, the results will be briefly discussed while reflecting on the hypotheses identified earlier in this thesis. The most convincing results are the results for models 1 and 2 corresponding to the first two hypotheses. The coefficients displayed in the table explain how receiving an IWT increases the likelihood of becoming a homeowner (hypothesis 1) and that the age at which one receives the IWT matters for the level of this likelihood (hypothesis 2). So, individuals with an IWT have better chances in the housing market and an increased likelihood of becoming a homeowner. However, this is not because they buy more expensive houses. The results from the third model show a negative effect of receiving an inheritance or gift on the WOZ-value of the house (hypothesis 3). Apparently, receiving an IWT gives individuals better chances in the housing market and will lead to individuals being able to buy a house at a younger age, however, it does not mean they buy a more expensive house compared to others who do not receive anything. This is because individual-level factors, such as income, still play a very important role in homeownership status and house value as well. Lastly, there is an impact of the policy as was presumed in the fourth hypothesis. The years with a broader tax-free donation policy show a larger impact of receiving an IWT on homeownership compared to the years without the policy.

In conclusion, the research has made a few developments and trends quite clear for the case of the Netherlands. There is a significant effect of receiving an IWT on the likelihood of becoming a homeowner, and this effect is dependent on policies regarding the taxation of gifts and donations. At the same time, the housing market has become less accessible over the last decade, as housing prices have increased and the average to buy a house has augmented as well. IWT receivers show a structurally lower buying age and respond to policy changes more than non-receivers. The impact of receiving an IWT on homeownership seems to be particularly large for young individuals. The idea that these individuals also buy more expensive houses is not shown in the research, so IWTs mainly influence the likelihood of becoming a homeowner and not so much the value of the house.

Conclusion

This thesis has sought to analyse the influence of IWTs on homeownership accessibility in the Netherlands. In addition, it aimed to review the extent to which amending the fiscal policy with regard to IWTs influences its impact on homeownership.

Based on academic literature and theories, we have identified four theories about the expected effects. First, it was hypothesized that receiving an IWT would have a positive impact on the likelihood of becoming a homeowner. The second hypothesis expects that the positive effects of IWTs on the likelihood of becoming a homeowner decreases, as an individual gets older. The third hypothesis said that individuals who receive IWTs are more likely to buy a more expensive house compared to non-receivers. Finally, it was hypothesized that the tax regime has a significant influence on the importance of receiving an IWT.

The analysis has found significant results for the first, second, and fourth hypotheses. This means that individuals who receive an IWT are more likely to become homeowners compared to those who do not. In addition, the age at which the IWT is received impacts the influence of IWT on homeownership. The younger an individual is, the more likely it is that an IWT impacts his homeowner status. A tax regime in which a lower donation tax rate is enforced increases the importance of IWTs on homeownership likelihood.

These results are somewhat surprising, as the Netherlands has been identified as a market-based regime type. In literature, this regime type is associated with high homeownership rates, as a result of a generous housing finance system. However, this thesis has shown that in the increasingly inaccessible Dutch housing market, IWTs are a significant driver of homeownership. The increasing importance of IWTs implies unfair positions of young individuals in the housing market. As homeownership is an important aspect of the household net wealth, these unfair positions might increase intragenerational wealth inequality.

A limitation of the thesis is the lack of focus on various trends and developments that might have influenced the housing market during the last two decades. Various government policies have been introduced or abolished, as discussed in the third section on methodology. In addition, trends like the ageing of society, stagnating housing mobility, increased migration, or the stalling construction of houses were not included in the analysis. It is evident that the housing market is a combination of all these various factors influencing it and ideally one would incorporate all these elements. Furthermore, it would have been an asset if the research could go more into the development of the coefficients of IWTs on homeownership per year to see the trend develop. Unfortunately, the used data does not lend itself to this goal.

Future research might focus on the development of the importance of IWTs in multiple European countries with the goal to expand and clarify the housing market regime typology as described in the literature section. Additionally, one could focus on possible government interventions tackling increasing inequality in the housing market and the implications of these possible policies. On a more micro-data level, interesting further research could be about taxation on donations, and how various tax regimes influence individual choices on donating IWTs. This thesis started with this topic by analysing a change in taxation policy, however, this could be extended by observing and comparing multiple regime types.

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Appendix

Table 5

Average Housing Prices

	WOZ (in €)	Self-identified Market Value (in €)	Housing Price Index
2005	-	262213.80	95.36
2006	-	269036.70	99.41
2007	-	283555.00	104.22
2008	-	287918.30	106.52
2009	-	297520.80	101.78
2010	-	299528.30	100
2011	-	300308.40	98.03
2012	277869.50	292305.70	91.46
2013	274732.70	276068.40	85.94
2014	257466.10	262912.80	86.66
2015	257965.70	261384.10	89.71
2016	259094.40	266083.00	94.45
2017	255012.60	268361.50	102.06
2018	274415.60	278087.10	111.59
2019	286488.70	297862.10	119.64
2020	302414.80	318001.10	129.22
2021	326596.80	342678.10	147.96
2022	365601.50	395763.10	167.57
2023	426834.40	410108.90	164.38

Figure 9

Average Housing Price Index

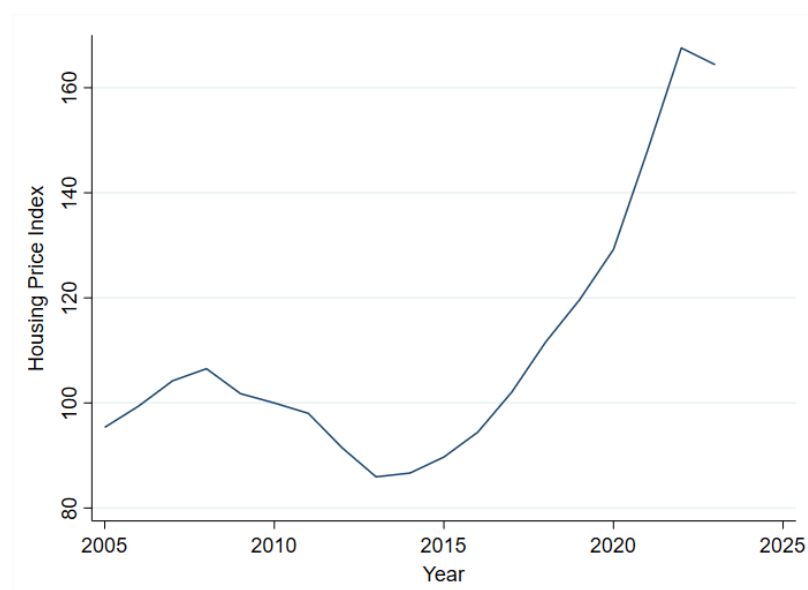


Table 6*Effects of IWT on ownership, interaction effect year*

	Homeownership
IWT	0.0267 (0.0168)
2013	-0.00374 (0.0103)
2014	-0.000264 (0.0185)
2015	0.000240 (0.0270)
2016	0.00271 (0.0358)
2017	0.0125 (0.0450)
2018	0.0194 (0.0536)
2019	0.0236 (0.0625)
2020	0.0230 (0.0715)
2021	0.0260 (0.0802)
2022	0.0299 (0.0892)
2023	0.0266 (0.0980)
IWT x 2013	-0.0181 (0.0188)
IWT x 2014	0.0120 (0.0182)
IWT x 2015	0.0140 (0.0179)
IWT x 2016	0.0112 (0.0179)
IWT x 2017	0.0287 (0.0181)
IWT x 2018	0.0270 (0.0181)
IWT x 2019	0.0313 (0.0181)
IWT x 2020	0.0172

	(0.0181)
IWT x 2021	0.0207
	(0.0183)
IWT x 2022	0.0452
	(0.0184)
IWT x 2023	0.0586
	(0.0185)
Age	0.0547***
	(0.00909)
Age ²	-0.000550***
	(0.0000181)
Log Income	0.0155***
	(0.00172)
Intercept	-0.733
	(0.380)
Observations	26554
Fixed effects (Household)	6241
R ²	
Within	0.0750
Between	0.1408
Overall	0.1077
Prob < F	0.0000

Table 7

Effects IWT on homeownership, interaction effect policy change and interaction effect HPI and interest rate

	Homeownership
IWT	0.0422*** (0.00784)
Tax-free donation years	0.0110 (0.00580)
IWT x Tax-free donation years	0.0135* (0.00673)
Age	0.0494*** (0.00432)
Age ²	-0.000548*** (0.0000181)
Log Income	0.0156*** (0.00172)
Housing Price Index	0.000535* (0.000221)
Interest Rate	-0.0459* (0.0223)
Housing Price Index x Interest Rate	0.000307* (0.000149)
Intercept	-0.733 (0.380)
Observations	26554
Fixed effects (Household)	6241
R ²	
Within	0.0732
Between	0.0787
Overall	0.0658
Prob < F	0.0000