Aggregate and Inter-Generational Effects of Changing the Real Estate Transfer Tax[†]

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Abstract

This paper examines the consequences of unanticipated changes in real estate transfer taxes (RETT), on housing and consumption decisions across generations. While local governments often rely on RETT to finance public spending, higher tax rates discourage property transactions and exacerbate the lock-in effect for elderly home owners. Using data from the German Socio-Economic Panel (GSOEP) combined with local real estate market indices, I estimate the effects of transfer taxes and local housing prices on the likelihood of retired home owners downsizing. I find that a 1 pp higher transfer taxes reduce the probability of downsizing by 0.5 pp, whereas a 1 pp higher local purchase price index increases it by 0.7 pp. To investigate the implications of changes in RETT on different cohorts, I develop a quantitative life-cycle model that incorporates housing decisions and consumption responses to unexpected tax reforms under a balanced budget. The model successfully replicates observed home ownership patterns in Germany between 2007-2020. In the short run, retired homeowners benefit from reduced transaction costs, which increase their old-age consumption by approximately 0.6%, even as house prices initially decline. In contrast, younger households experience an immediate decrease in consumption of up to -4%. In the long run, as house prices return to their original levels, higher income taxes introduced to offset the revenue loss from lower RETT lead to a decline in consumption of about -1% across all households.

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1 Motivation

In times of rising budget deficits, governments at both the federal and state levels seek to balance their budgets either by cutting spending or increasing tax revenue. For state governments, fiscal decentralization often limits the available tax instruments to raise revenue. One major source of income for subnational governments is taxes related to real estate. A common example is the real estate transfer tax, which is levied whenever a house or apartment is sold. While the primary goal of this tax is to increase government revenue, it also has broader implications for house prices and transaction volumes (e.g., Dolls, Fuest, Krolage, and Neumeier (2025) and Han, Ngai, and Sheedy (2025)). However, policymakers may overlook an important consequence of raising transfer taxes: the distortion in housing allocation across generations. Economic theory suggests that rational agents should adjust housing consumption to changing household size over the life cycle. Yet many elderly home owners fail to downsize, even when doing so would improve their financial well-being. Real estate transfer taxes may act as a significant but often overlooked obstacle to these adjustments. Such a tax-induced rigidity has three major consequences. It exacerbates the well-documented retirement consumption drop (e.g., Hurst (2008), Fernández-Villaverde and Krueger (2011), and De Nardi, French, and Jones (2016)), misallocates scarce housing resources away from young, expanding families, and traps financially constrained elderly in costly, underutilized properties. Understanding the broader effects of transfer taxes beyond their role in financing budget deficits is essential for explaining old-age consumption patterns, improving housing market efficiency, and addressing intergenerational aspects.

Against this background, I address three key questions: To what extent do real estate transfer taxes (RETT) discourage elderly households from downsizing? How does this friction contribute to the consumption drop observed around retirement? And what are the distributional consequences of policy changes across generations?

Germany provides a compelling case for studying economic reactions to changes in the real estate transfer tax for several reasons. First, since 2006, German federal states have been allowed to set their own RETT rates independently, creating substantial variation across states, with rates ranging from 3.5% in Bavaria to 6.5% in Brandenburg, North Rhine-Westphalia, Saarland, and Schleswig-Holstein. This degree of variation is rare; within the European Union, only Bulgaria, Germany, and Luxembourg have such a system with state-specific RETT rates (Bechtoldt, Freier, Geyer, and Kühn, 2014). Second, Germany has the lowest home ownership rate in the European Union (approximately 47% vs 70%[1]), making home ownership a deliberate choice rather than a necessity due to an underdeveloped rental market. This distinction is particularly relevant for elderly households, where housing consumption relative to household size is highly divergent between tenant status. In addition to differences between tenants and home owners, there are notable generational differences. In the German population, only 35% of households have more than 50 square meters per household member, while among retired households living in Germany, this figure rises to 65% (Pekka, 2021). Moreover, a significant share of elderly home owners in Germany—around 25%—are classified as "wealthy hand-to-mouth" (wHtM) consumers.[2] These individuals own a substantial amount of illiquid assets, such as housing, but have only minimal liquid funds.[3] For them, downsizing could be an opportunity to convert housing wealth into liquid assets, thereby improving their financial situation and making higher consumption during retirement possible. Third, the German Socio-Economic Panel (GSOEP) provides a rich longitudinal dataset, tracking approximately 30,000 individuals annually since 1984. It offers detailed information on housing decisions, wealth composition, and sociodemographic characteristics. The GSOEP's regional module also includes information on households' places of residence, allowing for the incorporation of local price indices to account for market trends and regional variation in real estate prices.

I make two main contributions to the literature on the consequences of unanticipated tax changes, life cycle consumption patterns, and housing decisions. First, I empirically demonstrate that downsizing decisions are influenced by changes in local real estate transfer taxes. An outcome rarely considered in tax policy debates. Using rich microdata, I can disentangle the effects of tax changes from personal and location-specific characteristics. I find that each percentage point increase in RETT reduces the probability of downsizing by 0.5 percentage points. Given that the baseline downsizing rate among elderly home owners is approximately 1% annually, this implies a 50% reduction in downsizing.[4] I also find that a 1 percentage point increase in local house price indices raises the probability of downsizing by 0.7 percentage points, as wealthier home owners are more willing to realize capital gains and adjust their portfolios. These opposing forces highlight how transaction costs and housing wealth shape ad-

[1]The home ownership rate has been approximately 70% in the European Union since 2010 Eurostat (2024)

[2]A household is defined as elderly if the head is over 65 years old.

[3]This definition follows Kaplan and Violante (2014), who classify wHtM consumers as those with less than half their monthly net income saved in liquid assets.

[4]This large proportional effect primarily reflects the low baseline probability of downsizing, with only 1% of elderly home owners downsizing annually, even modest absolute changes translate into substantial percentage effects.

justment decisions. Higher transfer taxes make it harder for home owners to sell their property, while increased house prices incentivize some to downsize and reallocate their wealth. Moreover, Dolls et al. (2025) show that transfer tax burden shifting to the seller side reduces the net price home owners can realize, even though the tax is formally levied on buyers.

Second, I develop a quantitative life-cycle model to analyze the distributional consequences of RETT changes across generations. This structural approach allows for a clear distinction between steady-state effects and transitional dynamics, both of which are essential for comprehensive policy evaluation. With the help of the model that is calibrated to 2006-2019 Germany, I can show that an unanticipated, permanent one percentage point reduction in RETT produces mixed intergenerational outcomes. Retired home owners at the time of the reform benefit from reduced transaction costs, enabling a modest increase in their old-age consumption. In contrast, younger renters experience more ambiguous effects. While they stand to gain from lower future transaction costs and reduced rents, they face higher income taxes as the government adjusts the flat tax on labor to maintain budget balance.[5] The resulting reduction in disposable income leads to lower consumption for these households. In the long run, the steady-state effects are moderate. House prices eventually return to their initial steady-state levels, the home ownership rate declines slightly, and overall consumption decreases by approximately 1%. These findings highlight the significant impact of transaction costs on consumption, particularly when offset by higher income taxes.

This paper is organized as follows: Section 2 situates my work within the existing literature. Section 3 gives an overview of the real estate transfer tax in Germany. Section 4 presents the data sources, the matching process, and descriptive statistics. Section 5 presents the estimation results. Section 6 introduces the quantitative model and the calibration procedure. Section 7 reports the benchmark results. Section 8 examines the effects of a tax rate change, discussing both steady-state comparisons and transitional dynamics. Section 9 concludes.

2 Literature

My project relates to two main strands of the literature, one that investigates RETT and home ownership, and another one that studies the retirement consumption puzzle.

[5] The government increases the proportional income tax to offset the revenue loss from lower RETT.

Numerous studies focus on the relationship between RETT and housing. While many focus on market outcomes and price dynamics, a subfield examines the implications for household housing decisions. Both Yang (2009) and Kaas, Kocharkov, Preugschat, and Siassi (2021) investigate the importance of transfer taxes over the life cycle. The former study focuses on the difference in consumption; when transfer taxes are zero, old-age consumption increases. The latter study explores why home ownership in Germany is lower compared to other countries. Among the main reasons is the RETT; however, the authors find that repealing the RETT would not be welfare enhancing because other taxes (especially labor) would have to be increased to balance the government's budget.

Buettner (2017), Dolls et al. (2025) and Han et al. (2025) focus on market outcomes, while Buettner (2017) and Han et al. (2025) find welfare loss and misallocation. Dolls et al. (2025) find that the tax increase reduces real estate prices, shifting the tax burden partly from the buyer to the seller. Not concerned with RETT, but reverse mortgages, Cocco and Lopes (2020) show that the low take-up in the US is partly due to high maintenance costs and risk of forced foreclosure.

Directly investigating downsizing behavior Banks, Blundell, Oldfield, and Smith (2012) find that US households downsize, while British households tend not to. They list geographical factors as well as institutional settings in the rental market as likely reasons. Additionally, Barczyk, Fahle, and Kredler (2023) offer another explanation: parents may rely on their children for long-term care (LTC), enabling them to retain their homes rather than depleting their savings to finance LTC.

I add to this literature by empirically showing how RETT influence downsizing behavior in addition to institutional settings. Moreover, local house price and rent data allow me to control for regional characteristics of the housing market. Quantitatively, I show that a steady-state comparison ignores important dynamics that occur during the transition.

The retirement consumption puzzle has prompted many studies, which identified three main motives why consumption drops around retirement. Precautionary saving, especially for health shocks, bequest motive, and housing. Hurst (2008) and Schwerdt (2005) find that part of the drop is due to how we measure consumption. While consumption expenditure drops drastically, the sum of market consumption and home-production goods intake drops less, because retired households increase home-production. Aguiar and Hurst (2013) decomposes consumption and shows that work-related consumption expenditure drops, while consumption for entertainment increases. While both De Nardi et al. (2016) and French, Jones, and McGee (2023) identify the importance of uncertainty about medical expenses, the latter study also finds that housing contributes to the drop in nondurable consumption. Households dislike moving, especially in old-age. Moreover, they like to live in their house and might have special motives of bequeathing their dwelling to their offspring.

I add to this literature by investigating consumption patterns of different generations that are directly or indirectly affected by the policy change. I show that while old-age consumption increases for generations that were surprised by the tax change, old-age consumption decreases for subsequent generations because they are subject to labor taxes.

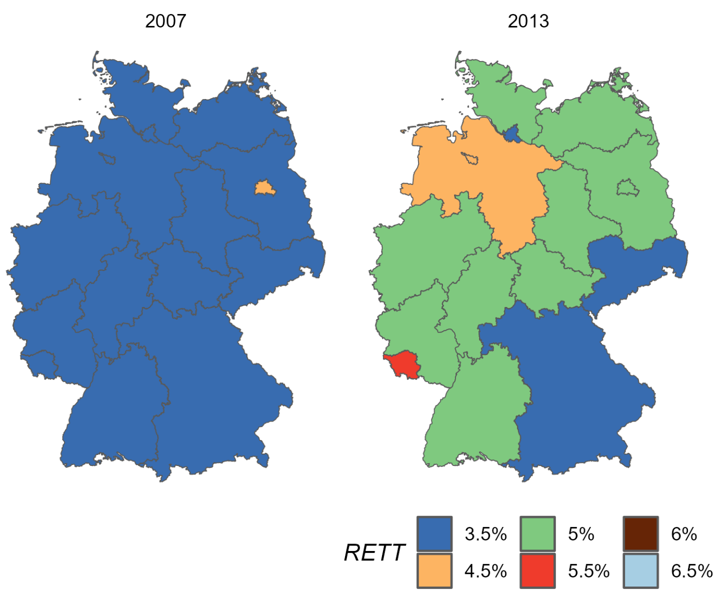
3 The Real Estate Transfer Tax

This section provides a brief overview of the real estate transfer tax (RETT) in Germany. Two major reforms occurred at the national level. In 1982, the federal government unified a previously complex RETT system, which had been set at the federal level with numerous exemptions. After the reform, every real estate transaction was taxed at a flat rate of 2%, with limited exemptions. In 1998, the tax rate was increased to 3.5%. In 2006, a significant policy change was introduced (*Föderalismusreform*), allowing federal states to set their own RETT rates.[6] Since then, all states except Bavaria, Hamburg, and Saxony have increased their RETT rates at least once.[7] Figure 1 illustrates how the RETT has evolved at the state level. There is no clear east-west trend or other discernible patterns that could explain the current tax environment across states.

[6] Grundgesetz für die Bundesrepublik Deutschland Art 105.

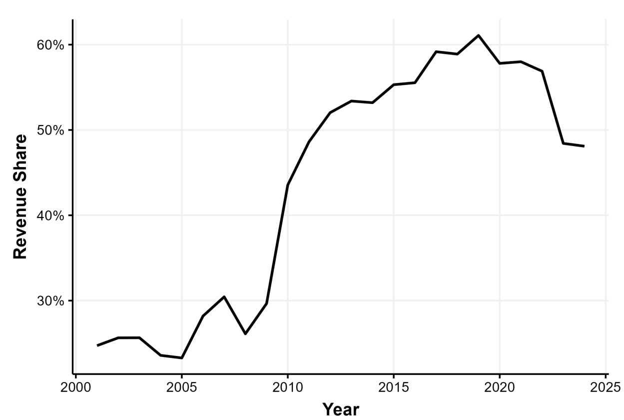
[7] Hamburg and Saxony raised their tax rate to 5.5% after the period under investigation (January 2023).

Figure 1: German Real Estate Transfer Tax across States and Time



In addition to the variation between, the RETT has become an important financing tool for federal states in Germany.

Figure 2: Share of RETT of total state tax revenue



Data: Statistisches Bundesamt (2025b), own calculation

Figure 2 reports the average share of RETT tax revenue of all state tax revenues. In Germany, besides

RETT, state taxes include taxes on inheritance, gambling, fire safety, and beer. However, the RETT is the only one where states can set the rate autonomously. After the 2006 policy change, the share of RETT in the overall state taxes increased drastically. This is certainly not only due to the tax rate increases, but also due to an increase in house prices over the same time. Nevertheless, the importance of the RETT has increased over the years, be it because tax rates or the tax base are higher. The revenue share of RETT has decreased in the last couple of years, probably due to a pandemic-related decrease in real estate sales.

4 Data

The empirical investigation combines multiple data sources to analyze the relationship between real estate transfer taxes and consumption. The primary data source is the German Socio-economic Panel (GSOEP), supplemented with additional regional information. Secondary data sources include regional real estate prices, rental rates, and home vacancy rates. The first two are derived from Ahlfeldt, Heblich, and Seidel (2023), while the vacancy rate data is obtained from Empirica Regio (2024).

The GSOEP is a longitudinal survey of individuals and households that is representative of the German population. For this study, I use a subsample of the GSOEP covering the years 2007 to 2020, as price data is only available for this period. The analysis focuses on the household level but incorporates individual characteristics, such as the age and education level of the household head. Since the three data sources operate at different regional levels, they have to be merged.

4.1 Merging the Data

Real estate market data is provided at the *Gemeindeverband* level (union of at least two municipalities), while vacancy rates are available at the spatial planning region level. The GSOEP data, on the other hand, is categorized by federal state and urbanization measures. For urbanization, I use the municipality size class (GGK), a discrete measure that divides municipalities into seven size classes. These size classes are outlined in Table 1. To integrate these different regional levels, I utilize data from Bundesinstitut für Bau-, Stadt- und Raumforschung (2024), which provides detailed information on all municipalities, including their membership in a *Gemeindeverband* and their various urbanization indices.[8] I

[8] In total, there are 4,600 associations of municipalities and 10,990 municipalities in Germany. The median association of municipalities consists of exactly one municipality, while the average is 2.4 municipalities per association. The largest

Table 1: Urbanization Index

GGK	Inhabitants
1	<2,000
2	2,000-4,999
3	5,000-19,999
4	20,000-49,999
5	50,000-99,999
6	100,000-499,999
7	$\geq$ 500,000

use the latest available measures from 2022. To match the real estate data with the SOEP data, I assign the same real estate price and rent to all municipalities within a given association. Then, using the GGK classification and federal state information, I calculate average prices for each urbanization and federal state pair.[9] Each municipality within a spatial planning region is assigned the same vacancy rate. Subsequently, averages are calculated for each urbanization and federal state pair. The number of price observations per federal state varies; for instance, Berlin has only one GGK classification. In the end, this process results in 84 distinct prices for each year.

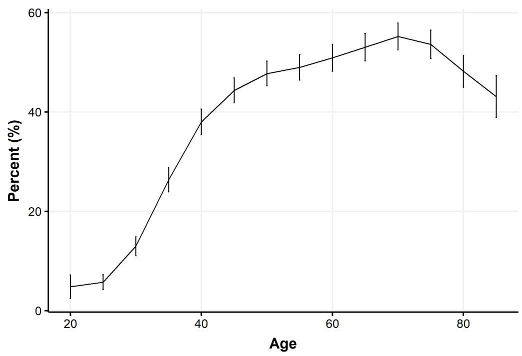
4.2 Home Ownership in Germany

Home ownership evolves over the life cycle and differs between GGK classes.

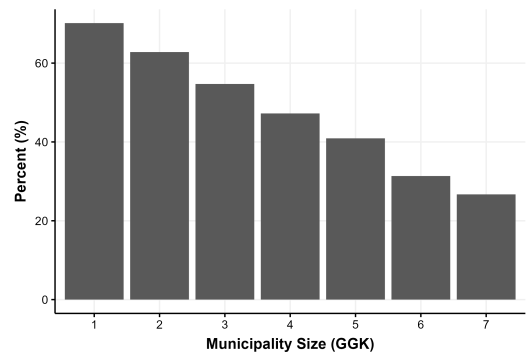
association includes a maximum of 71 municipalities.

[9] Appendix A.1.1 provides an example of the matching procedure.

Figure 3: Home Ownership Rate



(**a**) over the Life Cycle



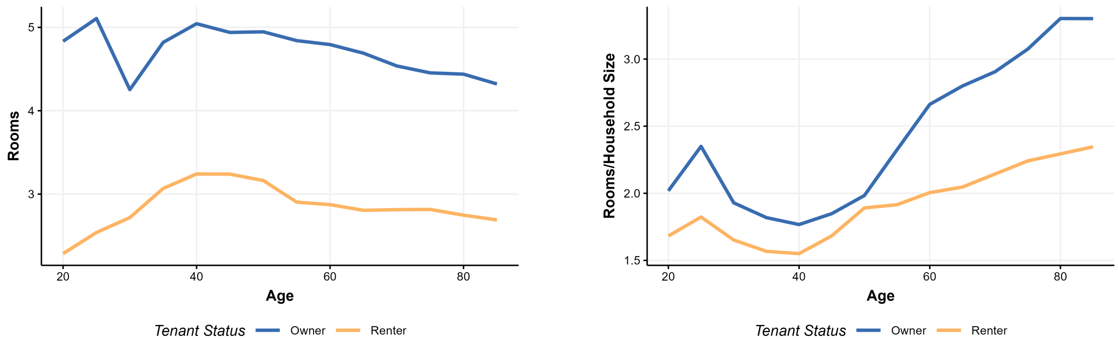
(**b**) over GGK Classes

Data: SOEP. Both figures show pooled averages of the home ownership rate. Panel (a) shows the home ownership rate with the vertical lines indicating the 95% confidencee intervals associated with a particular age. Panel (b) over municipality size classes.

Figure 3a illustrates that the home ownership rate follows a slightly hump-shaped pattern over the life cycle. Initially, only a small percentage of households own their homes. As the household head ages, the home ownership rate increases, after about 45 years of age, the rate increases slower, and then declines slightly after the household head reaches 70. Figure 3b highlights significant differences in home ownership rates across GGK classes. In rural municipalities, over 60% of households own their homes, whereas in the most urbanized regions, less than 30% are home owners. This stark contrast can partly be attributed to the limited supply of rental properties in rural areas.

4.3 Dwelling Size

Figure 4: Number of Rooms over the Life-Cycle



(a) Number of Rooms

(b) Number of Rooms by Household Size

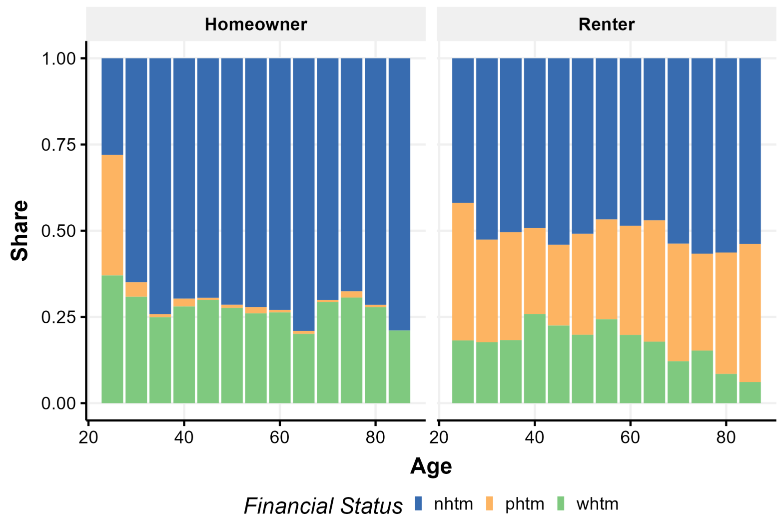
Data: SOEP. Both figures show pooled averages. Panel (b) shows the average number of rooms divided by the number of household members.

Figure 13a depicts how the number of rooms evolves over the life cycle in the pooled cross-section. For both renters and home owners, the number of rooms appears to decline after the age of approximately 45–50. However, when adjusting the number of rooms for the number of household members, a different pattern emerges. In Figure 4b, there is not only a level difference between renters and home owners, but the two curves also diverge after the age of 50. For instance, home owners at the age of 80 have, on average, one more room per household member compared to renters. This suggests a potential for downsizing among home owners. Renters, on the other hand, seem to adjust their dwelling size more closely to the change in household size.

4.4 Financial Constraints and Portfolio Composition

One potential reason for households to downsize is financial constraints, particularly for home owners with a substantial amount of illiquid assets. To measure financial constraints, I adopt the definition from Kaplan and Violante (2014), which classifies individuals as either wealthy Hand-to-Mouth (w-HtM) or poor Hand-to-Mouth (p-HtM). A household is considered w-HtM if it holds illiquid assets but has liquid assets amounting to less than half of its monthly earnings. In contrast, p-HtM households have no illiquid assets and equally low liquid assets. Figure 5 shows the shares of p-HtM and w-HtM households.

Figure 5: Constraints by tenant status



Data: SOEP. Wealth data is available for 2002,2007,2012, and 2017 only. Data from these four waves are pooled.

Figure 5 reveals that the share of wealthy Hand-to-Mouth (wHtM) households among home owners remains relatively stable over the life cycle, with a slight increase after retirement. In contrast, for renters, the share of w-HtM households declines during retirement. Overall, a significantly larger proportion of renters are financially constrained compared to home owners.

Table 2: Portfolio Composition

Variable	Overall	Home owner	Renter
Real Estate	116,959	251,976	11,644
Financial Assets	21,110	33,611	11,358
Business Assets	17,401	32,768	5,414
Tangible Assets	4,999	7,845	2,778
Other Assets	18,904	29,834	10,176

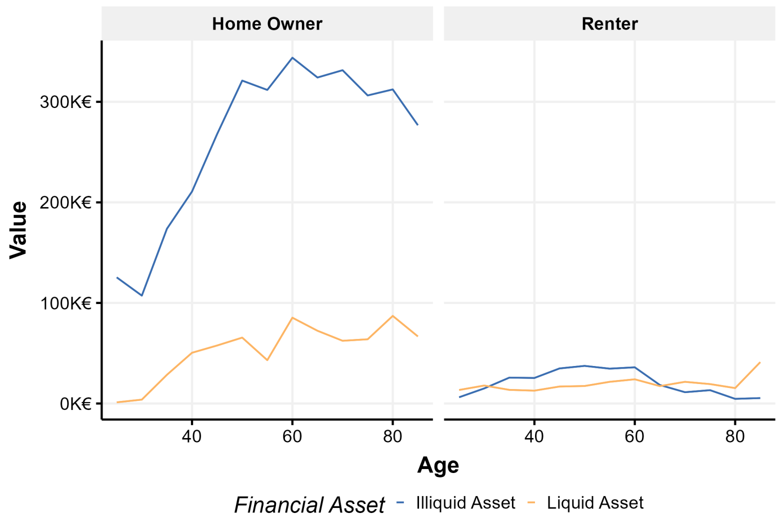
Data: See Figure 5. € are converted to real values using CPI (2021=100). All values are averages. Overall includes both home owners and renters.

Table 2 demonstrates that home owners possess more assets across all reported asset classes compared to renters. The real estate category includes non-owner-occupied properties, which explains why renters also report some real estate holdings. A key takeaway from this table is that real estate is by far the most significant asset for the average German household.[10] Figure 6 examines the composition

[10]The SOEP variables on wealth do not include pension wealth, which is another important asset for Germans, especially

of household portfolios over the life cycle.

Figure 6: Portfolio Composition over the Life Cycle



Data: See Table 2.

The left panel of Figure 6 illustrates how the stock of illiquid assets for home owners increases over the life cycle. This growth is primarily driven by mortgage repayment during their working years, which leads to a rise in net illiquid assets. Alongside this increase in illiquid assets, liquid assets also continue to grow for home owners over time.

Conversely, renters accumulate illiquid assets during their working years but begin to dissave after the age of 60. This pattern aligns more closely with the typical life-cycle behavior predicted by economic theory.

4.5 Characteristics of Downsizers

This section examines households in the year before downsizing, focusing on a restricted sample where the household head is older than 55 years. This is the same sample that will be used in the reduced-form empirical estimation. Table 3 provides a summary of the average characteristics of households that downsize in the following year. Given that downsizing is a relatively rare event, the standard deviation of all variables is quite large. Notably, the average liquid wealth of downsizing households is very low,

for renters.

Table 3: Descriptive Statistics

Variable	
Age	71
	(19.5)
Home Owner	37%
	(0.484)
Net Income (monthly)	€2,234
	(2,087)
Liquid Assets	€37,000
	(222,5456)
Rooms/HH Size	3
	(1.34)
Formerly Married	62%

Data: SOEP. Restricted sample: Households head over 55 years old. Standard deviation in parentheses. Formerly married included: separated, divorced, and widowed household heads. € are converted to real values using CPI (2021=100).

highlighting the consumption potential of these households. For the 37% of downsizing households that are home owners, an important question is how many remain home owners after downsizing. Conversely, it is also relevant to ask how many renters downsize and subsequently become home owners. Table 4 presents these transition patterns. While only 6% of renters who downsize transition to becom-

Table 4: Tenant Status Change

	Renter	Home Owner
Renter	94%	6%
Home Owner	73%	27%

Data: SOEP. Rows indicate tenant statuses today, and columns the two possible tenant statuses tomorrow and their frequency.

ing home owners, 27% of home owners remain home owners after downsizing. This suggests a distinct preference for home ownership, as some households choose to retain ownership of their dwelling even after downsizing in old age. However, the majority of downsizing home owners transition to becoming renters.

4.6 Regional Mobility Patterns

This section examines mobility patterns among households that move. Table 5 presents the percentages of movers and downsizers who change the federal state and GGK class during the relocation process. Downsizers represent a subset of movers, as they are households that relocate to a dwelling with

Table 5: Mobility Pattern

Status	Change Federal State	Change GGK
Mover	3%	7%
Downsizer	13%	35%

Data: SOEP.

fewer rooms than their previous one. Overall, only 3% of movers change their federal state, while 7% change their GGK class. However, downsizers exhibit distinct mobility patterns: 13% of all downsizers change their federal state, and 35% change their GGK class. It is important to note that, with the available regional information, I cannot calculate exact moving distances. For instance, even if a household does not change its GGK class, it could have moved to the opposite side of the federal state while remaining in a municipality within the same GGK class.

In addition to overall changes, Table 6 reports the average difference in GGK class for movers and

Table 6: Change in GGK class

Status	Change Federal State	Δ GGK
Mover		
	No	-0.013
	Yes	-1.6
Downsizer		
	No	0.09
	Yes	-0.39

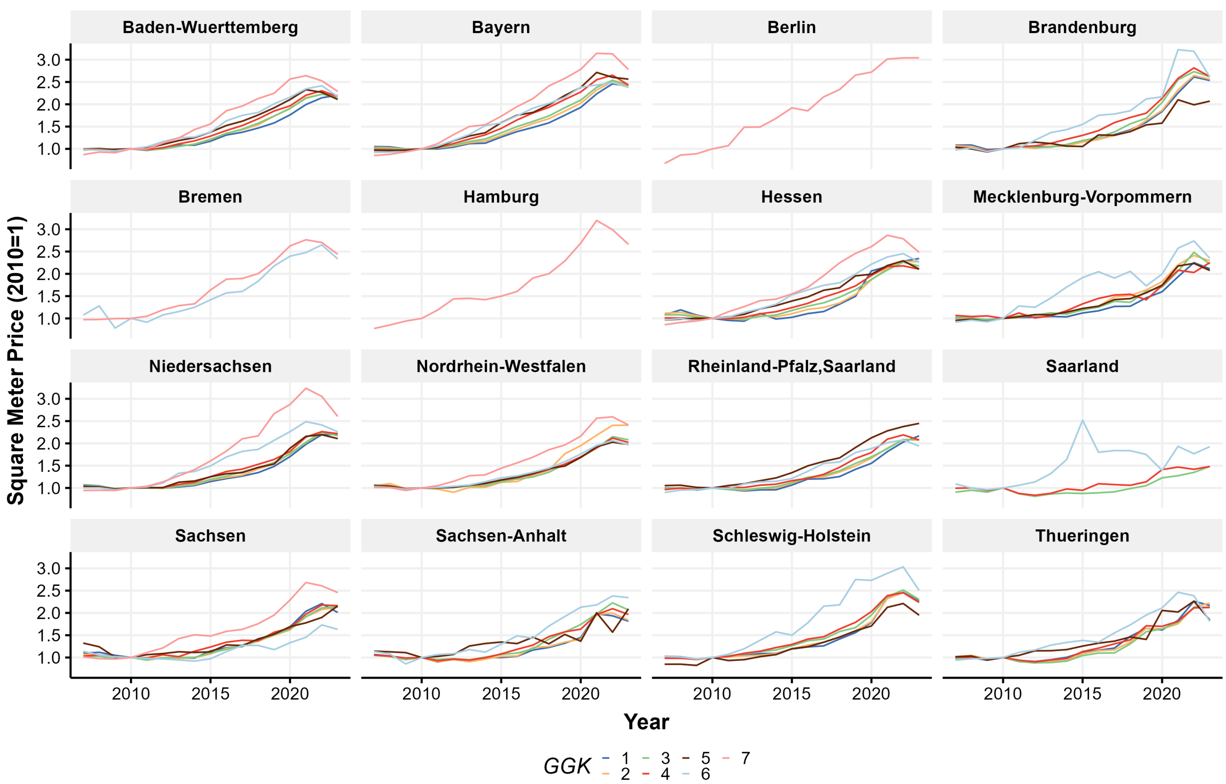
Data: SOEP.

downsizers. For households that remain within the same federal state, the change in GGK class is minimal. However, households that relocate to a different federal state tend to move to municipalities with fewer inhabitants. Interestingly, the average change in GGK class is more pronounced for movers than for downsizers.

4.7 Price Trends at the GGK Level

This section presents general price trends based on the data provided by Ahlfeldt et al. (2023). Figure 7 shows the average real estate prices by GGK class and federal state. Each GGK class price is normalized to 1 in 2010. What Figure 7 illustrates is the variation in growth rates across GGK classes and federal states over time. Over time, there is a clear upward trend in real estate prices across all federal states

Figure 7: Real estate prices by GGK and Federal State

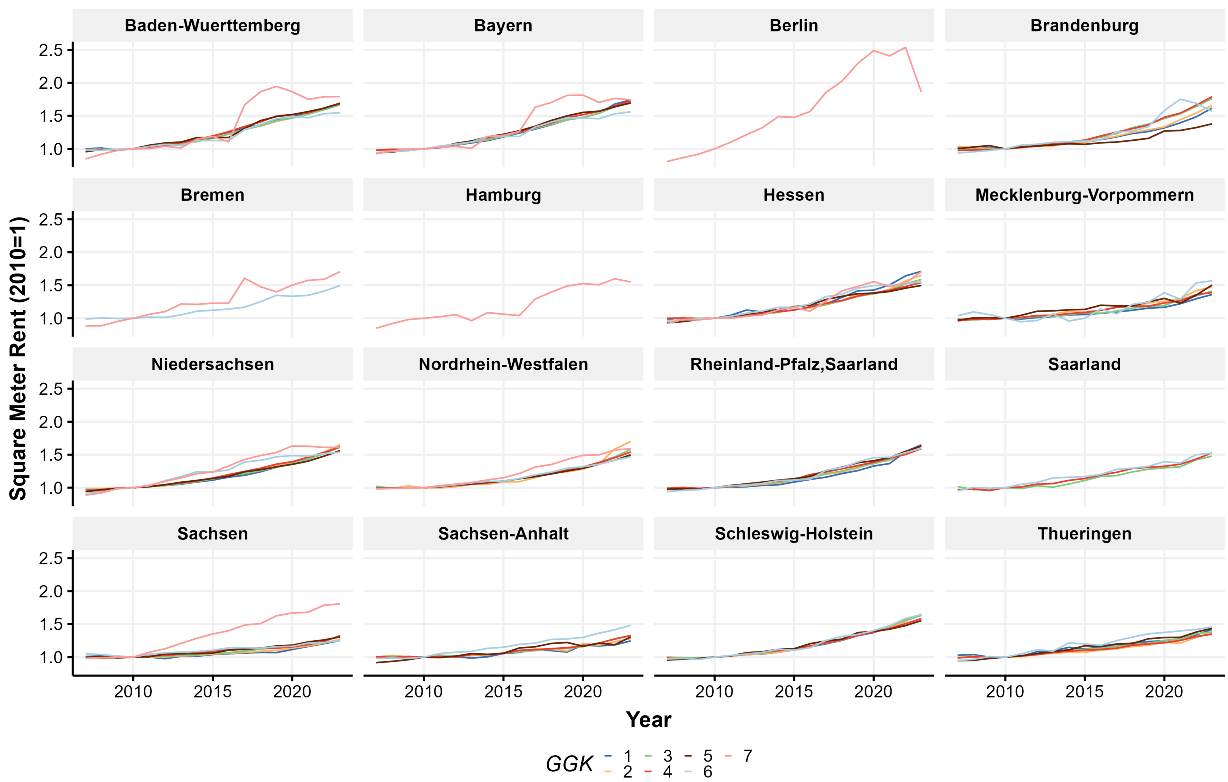


Data: Ahlfeldt et al. (2023). Normalized to 1 in 2010

and GGK classes. The only exception is Saarland, where prices show minimal growth. In addition to differences between federal states, there are also variations in price growth among GGK classes within each federal state. However, there is no consistent pattern regarding which GGK class experienced the sharpest growth. For instance, in federal states such as Baden-Wuerttemberg, Bayern, and Hessen, GGK class 4 exhibited the most significant growth. Meanwhile, in states like Brandenburg, Mecklenburg-Vorpommern, and Schleswig-Holstein, GGK class 3 saw the sharpest price increase.

Figure 8 presents trends of rental prices across federal states and GGK classes. These indices are normalized in the same way as the real estate prices in Figure 7, with each GGK class index set to 1 in 2010. The y-axis in Figure 8 reveals that rents did not rise as sharply as purchase prices. A notable outlier is Berlin, where rents experienced the most pronounced increase, followed by a clear decline after 2020. Additionally, the differences in rent trends between GGK classes within federal states are smaller compared to the differences observed for purchase prices. This suggests that rent increases were more uniform across GGK classes within federal states.

Figure 8: Rents by GGK and Federal State



Data: Ahlfeldt et al. (2023). Normalized to 1 in 2010

5 Empirical Estimation

This section examines the immediate impact of real estate transfer taxes (RETT) on the downsizing behavior of household heads older than 55 in Germany between 2006 and 2020. To analyze this relationship, a fixed-effects Logit model is used to estimate how variations in RETT, along with other factors, influence downsizing decisions. The empirical specification of the model is as follows:

$$logit(p_{i,t+1}) = log\left(\frac{p_{i,t+1}}{1-p_{i,t+1}}\right) = \beta_0 + \beta_1 * \Delta RETT_{state,t} * owner_{i,t} + \beta_2 * X_{i,t} + \delta_t + \delta_{state*GGK} + \epsilon_{i,t} \tag{5.1}$$

where $p_{i,t+1}$ is the likelihood that a household will downsize in the next period, $\Delta RETT_{state,t}$ is the difference between the tax in year t and $t-1$ in a particular state, $owner_{i,t}$ is a dummy indicating whether the household owns their dwelling, $X_{i,t}$ is a vector of control variables, and δ_t and $\delta_{state*GGK}$ are year and state fixed effects. In addition to household-specific controls, $X_{i,t}$ also includes state-level unemployment rates, which are intended to account for regional business cycles. The choice of using the first difference of RETT instead of the level is supposed to capture the immediate effect this tax change has on the downsizing probability.

The analysis focuses on a subsample of the SOEP, restricted to households with heads aged 55 to 85 years. Furthermore, the sample is limited to years after 2005, as this marks the period when states were granted autonomy to adjust RETT rates.

Table 7 presents two model specifications. Model 1 excludes real estate price information, while Model 2 incorporates coefficients related to the real estate market.[11] The results indicate that a variety of factors influence the decision to downsize.

The number of children positively affects the likelihood of downsizing, aligning with the hypothesis that larger households require more space during earlier stages in their life.[12] Once children leave the household, the potential to downsize increases. Additionally, better health status is associated with a higher probability of downsizing, possibly reflecting longer planning horizons or the ability to enjoy accumulated wealth.[13] Conversely, poor health may lead to survey attrition, reducing observations of such households. Marital status also plays a significant role. Widowed, divorced, or separated individuals are more likely to downsize compared to married individuals.

The primary variables of interest are related to changes in RETT. Home ownership significantly reduces

[11] Table 12 in Appendix A.2 provides additional specifications, including national real estate prices and interaction terms.

[12] The number of children is defined as the number of children the household has, irrespective of their current place of residence. Since I focus on a subsample where the household head is over 55 years old, most children are no longer living in their parents' home.

[13] Health status is indicated on a Likert scale by each household member. I take the worst health status in the household as a control.

Table 7: Model Summary

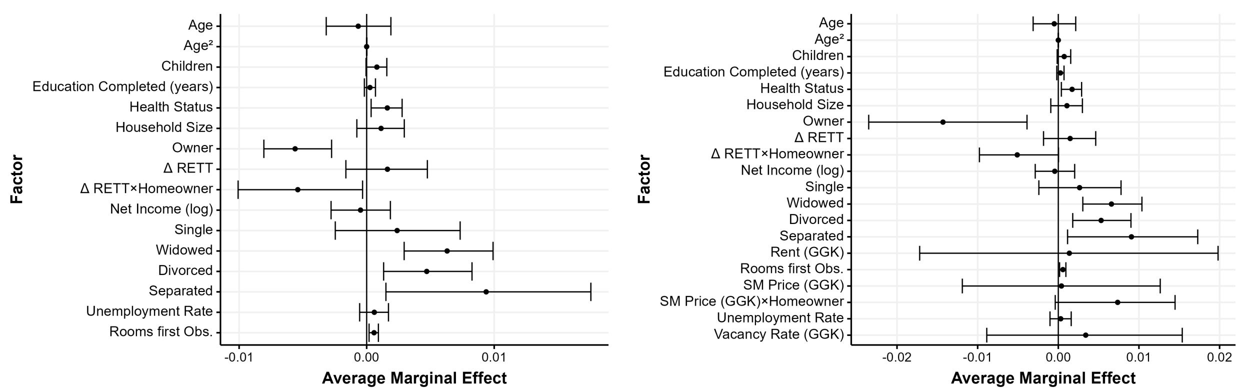
	Model 1	Model 2
Age	−0.066	−0.050
	(0.130)	(0.135)
Age²	0.0004	0.0003
	(0.001)	(0.001)
Children	0.080*	0.074*
	(0.042)	(0.043)
Education Completed (years)	0.027	0.027
	(0.022)	(0.023)
Health Status	0.163***	0.172***
	(0.062)	(0.064)
Household Size	0.114	0.108
	(0.096)	(0.101)
Owner	−0.565***	−1.437***
	(0.137)	(0.502)
ΔRETT	0.164	0.148
	(0.163)	(0.166)
ΔRETT*Owner	−0.543**	−0.512**
	(0.246)	(0.248)
Net Income (log)	−0.049	−0.044
	(0.119)	(0.125)
Single	0.286	0.318
	(0.272)	(0.282)
Widowed	0.631***	0.663***
	(0.164)	(0.171)
Divorced	0.504***	0.563***
	(0.172)	(0.176)
Separated	0.839***	0.832***
	(0.273)	(0.282)
Unemployment Rate (State Level)	0.061	0.030
	(0.058)	(0.067)
Rooms first Observed	0.058***	0.058***
	(0.018)	(0.020)
SM price (GGK)		0.039
		(0.629)
Rent (GGK)		0.137
		(0.948)
Vacancy Rate (GGK)		0.341
		(0.621)
SM Price(GGK)*Owner		0.740*
		(0.380)
Constant	−17.509***	−17.995***
	(4.632)	(4.873)
Observations	65,450	61,617
# Downsized	660	624
Fixed Effects	Year + State*GGK	Year + State*GGK
Log Likelihood	−3,413.770	−3,206.459
Akaike Inf. Crit.	7,055.540	6,642.918

Notes: *p<0.1; **p<0.05; ***p<0.01 All models estimate the probability of downsizing next year on a subsample of the SOEP where household heads are between 55 and 85 years old in the years 2006-2020. Models 2 include different real estate market indicators. Model 2 has fewer observations since my real estate price data only starts in 2007. *Rooms first Observed* is the number of rooms a household has the first time they appear in my data set.

the probability of downsizing, as home owners consume illiquid housing services that are difficult to adjust. Additionally, increases in RETT negatively impact downsizing among home owners. This effect may stem from reduced liquidity or lower expected sale prices, as part of the tax burden is passed on to sellers (Dolls et al., 2025). Model 2 further reveals that increases in square-meter prices positively influence downsizing behavior among home owners, as they may want to take advantage of the increased value of their home by selling it.

Figure 9 illustrates the average marginal effects (AME) for Models 1 and 2.[14] For home owners, each

Figure 9: Average Marginal Effects



(a) Model 1 **(b)** Model 2

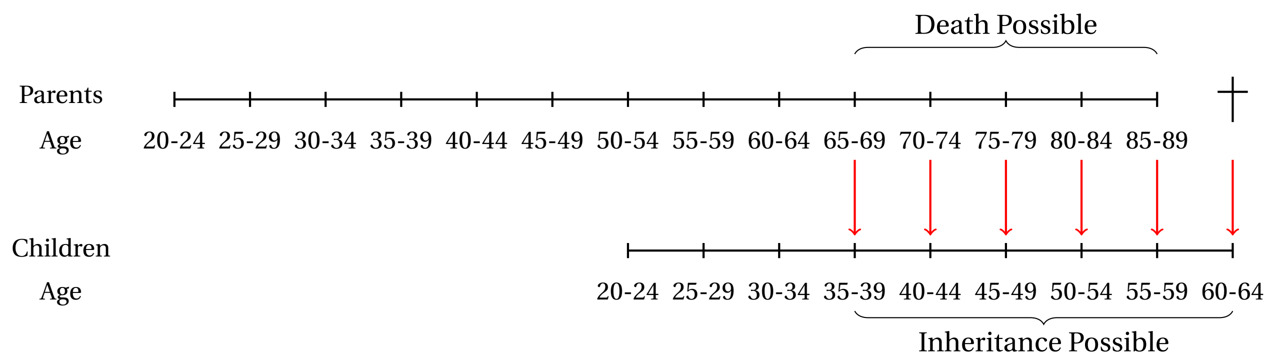
marginal increase in RETT reduces the probability of downsizing by 0.5 percentage points (Figure 9a). Similarly, increases in house price indices raise the probability of downsizing by 0.7 percentage points for home owners (Figure 9b).

6 Model

To analyze consumption responses and quantitatively evaluate policy changes, I develop a heterogeneous agent life-cycle model that captures key features of household behavior and housing decisions.

[14]Table 13 in Appendix A.2 provides numerical values for the AMEs.

6.1 Demographics



Agents enter the model economy at age 20 with no initial assets. During their working years, which span from age 20 to 65, they survive with certainty and supply labor inelastically. Upon reaching retirement at age 65, agents face a probability p_t of dying in the following period. The maximum age in the model is 90, after which agents die with certainty. To simplify the analysis, the life cycle is divided into 14 discrete periods, each representing five years. This structure allows the model to capture long-term dynamics while maintaining computational tractability.

6.2 Preferences

Agents in the model derive utility from two sources: goods consumption (c_t) and housing consumption (s_t). Their preferences are represented by the following utility function:

$$U(c_t, s_t) = \frac{\left((c_t/\gamma_t)^{\sigma} * (\rho_{t,h} * s_t/\gamma_t)^{1-\sigma}\right)^{1-\eta}}{1-\eta} \tag{6.1}$$

This specification follows Kaas et al. (2021) and incorporates several key parameters. Here, c_t and s_t represent goods and housing consumption, respectively. The parameter η captures risk aversion, while σ denotes the elasticity of substitution between housing and non-housing consumption. The term γ_t is the household equivalence scale, which adjusts for household size, and $\rho_{t,h}$ is a time-dependent utility shifter that reflects the additional utility derived from home ownership.

6.3 Bequests

Bequests in the model follow the framework of De Nardi (2004). The utility derived from leaving a bequest is represented by the following function:

$$B(a,h) = \phi_1 * \left(1 + \frac{a + hp}{\phi_2}\right)^{1-\eta} \tag{6.2}$$

In this formulation, a represents financial assets, and hp denotes housing wealth. The parameter ϕ_1 determines the overall strength of the bequest motive, while ϕ_2 governs the degree to which bequests are treated as a luxury good. The parameter η, consistent with the preferences in Equation 6.1, captures risk aversion.

6.4 Assets

Agents in the model can hold two types of assets: liquid risk-free bonds and housing wealth.

6.4.1 Risk-Free Bond

The risk-free government bond, denoted by a, is a liquid asset that agents can use to accumulate precautionary savings. These liquid assets are continuous and pay a constant interest rate r, providing a stable return over time.

6.4.2 Housing

Housing wealth, denoted by hp, is modeled as a discrete asset that does not generate interest. The discrete nature of housing reflects the indivisibility of real estate, as agents cannot make marginal adjustments to the size of their property.

6.5 Owning vs. Renting

Households can access housing services (s) either by owning or renting. Renters directly choose the level of housing services s they consume and pay rent, denoted by l. In contrast, home owners consume housing services determined by the size of their property, such that $s = \upsilon h$, where h represents house size and $\upsilon > 1$ represents that home owners like housing services more if they own the dwelling. Home owners cannot rent out rooms in their dwelling, nor can they rent additional housing services. Home ownership comes with additional costs. Home owners incur maintenance expenses equal to δp, where $\delta \in (0,1)$ represents the maintenance rate and p is the house price. These costs fully offset depreciation. Furthermore, home owners face transaction costs, including RETT, when buying or selling property, with sellers paying half the amount that buyers incur. To purchase real estate, households can take out a mortgage, borrowing up to $(1-\lambda)$ of the house price, where $\lambda \in (0,1)$ represents the required down payment rate. Borrowers must pay interest at the rate r and repay the entire loan before retirement. Households without housing wealth must rent and have the flexibility to choose their level of housing services over a broader range.

6.6 Housing Market

The housing market in this model follows the framework of Kaplan, Mitman, and Violante (2020). Below, I focus on the key components of the rental and construction sectors.

6.6.1 Rental Sector

The rental sector is competitive and consists of firms that own housing and rent it out to households. Each firm incurs an operating cost ψ for every unit of housing they rent out. A representative rental firm solves the following optimization problem:

$$J(\tilde{H}) = \max_{\tilde{H}'} \Big[l - \psi\Big]\tilde{H}' - p\Big[\tilde{H}' - (1-\delta-\tau_h)\tilde{H}\Big] + \left(\frac{1}{1+r}\right)\mathbb{E}[J(\tilde{H}')] \tag{6.3}$$

where $\tilde{H}$ represents the firm's current housing stock, l is the rent charged per unit of housing services, ψ is a fixed cost for renting out apartments, p is the price of housing, δ is the depreciation rate, τ_h is the transfer tax, and r is the interest rate. The optimization leads to the following equation for the rent charged by competitive firms:

$$l = \psi + p - \left(\frac{1-\delta-\tau_h}{1+r}\right)\mathbb{E}p' \tag{6.4}$$

Rental prices depend on operating costs, current housing prices, and expectations about future prices. In the steady state, where $p = p'$, equation 6.4 simplifies to:

$$l = \psi + \frac{r+\delta+\tau_h}{1+r} * p$$

6.6.2 Construction Sector

The construction sector is competitive and produces new housing using a production function:

$$I_h = (\Theta N_h)^{\alpha} \bar{L}^{1-\alpha} \tag{6.5}$$

where I_h is the amount of new housing investment, Θ is the productivity parameter, N_h is the labor input, $\bar{L}$ is the amount of new land permits, and $\alpha \in (0, 1)$ is the elasticity of housing production with respect to labor. The representative construction firm solves the following static maximization problem:

$$\max_{N_h} pI_h - wN_h \tag{6.6}$$

where p is the price of housing and w is the wage rate. This optimization leads to the following investment function if $\Theta = w$, which is what Kaplan et al. (2020) assume:

$$I_h = [\alpha p]^{\frac{\alpha}{1-\alpha}} \bar{L} \tag{6.7}$$

6.7 Income risk

Labor income in the model is represented by the following equation:

$$w(z, t) = e_t * p_z \tag{6.8}$$

where $w(z, t)$ is the labor income, e_t represents age-specific productivity, and p_z is idiosyncratic productivity. The idiosyncratic productivity p_z follows an autoregressive process of order one (AR(1)). The final productivity state z before retirement determines the household's pension income. Retired households receive a share of the mean income associated with their last productivity state, denoted by $Tr(z)$.

6.8 Households

Four distinct eras in a household's life cycle influence its decision-making. Parameter constraints (for a and s) are only reported in the first era. The only changing constraint is the no-borrowing constraint during retirement, which is stated in the respective subsection.

6.8.1 Prior to inheritance

This era is possible from period 1 to period 8. Agents experience productivity shocks, work, decide on their portfolio composition, and expect an inheritance from period 3 onward.

$$V_{pI}(a,h,z,t) = \max_{c,s,a',h'} \left(u(c,s) + \beta \left[(1-\pi_I)\mathbb{E}[V_{pI}(a',h',z',t+1)] \right.\right.$$
$$\left.\left. + \pi_I \mathbb{E}[V_I(a',h',z',t+1)] \right] \right)$$

$$a' + (1 + \mathbb{1}_{h\neq h'}\tau_h)h'p' = w(z,t)(1-\tau_l) + (1+r)a + (1-\delta)hp - c - (\mathbb{1}_{h=0} * l)s$$

$$a \begin{cases} \geq a_{min}, & \text{if } h' > 0 \\ \geq 0, & \text{otherwise} \end{cases}$$

$$s \begin{cases} = \upsilon h, & \text{if } h > 0 \\ > 0, & \text{otherwise} \end{cases}$$

6.8.2 Inheritance

This era lasts from period 4 to period 9. Agents experience productivity shocks, work, decide on their portfolio composition, receive an inheritance, and could die next period in period 9.

$$V_I(a,h,z,t) = \max_{c,s,a',h'} \left(u(c,s) + \beta \left[(1-\pi_d) \left[\mathbb{E}[V_{aI}(a',h',z',t+1)] * 1_{t<9} + \mathbb{E}[V_R(a',h',z',t+1)] * 1_{t=9} \right] \right.\right.$$
$$\left.\left. + \pi_d B(a',h') \right] \right)$$

$$a' + (1 + \mathbb{1}_{h\neq h'}\tau_h)h'p' = w(z,t)(1-\tau_l) + (1+r)a + (1-\delta)hp - c - (\mathbb{1}_{h=0} * l)s + I(z,t)$$

6.8.3 After Inheritance

This era lasts from period 5 to period 9. Agents experience productivity shocks, work, decide on their portfolio composition, and could die the next period in period 9.

$$V_{aI}(a,h,z,t) = \max_{c,s,a',h'} \Bigg(u(c,s) + \beta \Big[(1-\pi_d) \Big[\mathbb{E}[V_{aI}(a',h',z',t+1)] * 1_{t<9} + \mathbb{E}[V_R(a',h',z',t+1)] * 1_{t=9} \Big] + \pi_d B(a',h') \Big] \Bigg)$$

$$a' + (1 + \mathbb{1}_{h \neq h'} \tau_h) h' p' = w(z,t)(1-\tau_l) + (1+r)a + (1-\delta)hp - c - (\mathbb{1}_{h=0} * l)s$$

6.8.4 Retired

This era lasts from period 10 to period 14. Agents decide on their portfolio composition and could die in the next period. Their worker productivity stays fixed at the value they had in period 9, the last period they worked. The worker productivity pins down their pension, $Tr(z)$.

$$V_R(a,h,z,t) = \max_{c,s,a',h'} \Bigg(u(c,s) + \beta \Big[(1-\pi_d) V_R(a',h',z,t+1) + \pi_d B(a',h') \Big] \Bigg)$$

$$a' + (1 + \mathbb{1}_{h \neq h'} \tau_h) h' p' = Tr(z) + (1+r)a + (1-\delta)hp - c - (\mathbb{1}_{h=0} * l)s$$

$$a \geq 0$$

6.9 Competitive Equilibrium

Consider an individual state vector $q = \{a,h,z,L\}$, where a represents a liquid and h an illiquid asset level, z worker productivity, and L describes the agent's stage in life (before inheritance, receiving inheritance, after inheritance, or retired). The decision rules resulting from the agents' optimization problems, combined with the exogenous Markov processes for worker productivity, yield a probability distribution of next period's state vector q' conditional on q.

Let $\mathbf{x}$ denote the aggregate state vector, where aggregation takes place across all individuals.

Definition. *A stationary equilibrium is given by a wage w, prices for housing p, taxes on labor τ and housing transfer τ_h, allocations for consumption $c(s)$, assets $a(s)$, housing stock $h(s)$, and a constant distribution of agents over states s, P*(x), such that given w, p, τ_l and τ_h the following conditions are fulfilled:*

1. *The allocations c, a, h, and expected bequests $b(s)$ solve the agents' maximization problems.*
2. *Housing investment equals the sum of replacement needs (to offset depreciation) and net additions required by demographic change (entries minus exits).*
3. *The government's budget is balanced, with tax income equaling pension expenses.*
4. *The distribution P^* is the invariant distribution for the economy.*

6.10 Calibration

Table 8: Externally calibrated parameters

Parameter	Value	Explanation/Source
β	0.95	Yearly frequency
δ	0.01	100-year housing lifespan
η	2	Standard parameter
π_d	Vector	Life-Expectancy Table Germany
π_I	Vector	Lagged π_d
Tr	30% of mean income of last state	Institutional approximation
ρ	0.922	Bayer and Juessen (2012)
σ^Y	0.172	Bayer and Juessen (2012)
λ	0.1	Institutional approximation
τ_h	9%	Institutional approximation
τ_l	37%	Institutional approximation
e_t	Vector	own estimation/SOEP
γ_t	Vector	own estimation/SOEP
r	2%	Yearly frequency
ψ	0	

Notes: Yearly frequencies are converted to match the 5 year model period.

Age-dependent productivity vector, e_t, is calculated using the method developed by Hansen (1993). The household equivalence scale, γ_t, is computed as the square root of the average number of household members by age of household head.

Table 9: Internally Calibrated Parameters

Parameter	Value
σ	0.832
υ	1.93
$\rho_{t,h}$	1.07
ϕ_1	−2.981
ϕ_2	15
Lp	0.23

Notes: Lp is adjusted to fix the house price to 1 in the steady state.

Table 10: Targeted Moments

Moment	Data	Model
Home Ownership Rate (40-59)	47%	45%
Home Ownership Rate (60+)	51%	51%
Average Bequest	€226,000	€170,845
Gini	0.75	0.69
Share wHTM	26%	12%

Notes: All data from SOEP. Average bequests in the data are calculated as the average net wealth of people 65+. Average bequests in the model are transformed from normalized assets to Euro values using the average household gross income of 2013 (Statistisches Bundesamt, 2025a).

There is no one-to-one mapping between the internally calibrated parameters and the target moments, but certain parameters are more informative for specific targets.

σ, υ, and $\rho_{t,h}$ are all related to the consumption of housing services and, specifically, home ownership.[15] However, by maintaining the home ownership rate at old age through $\rho_{t,h}$, more households leave a house, resulting in larger inheritances. In addition to old-age housing utility, ϕ_1 and ϕ_2 directly determine the bequest motive, influencing both the average bequests and the Gini coefficient. The share of wealthy hand-to-mouth (wHTM) households is influenced by all parameters. Since only home owners can be wHTM and housing is the only illiquid asset, a strong preference for home ownership prevents home owners from becoming renters and increasing their liquid wealth. Furthermore, when inheritances are concentrated at the top, more households have low liquid assets, which also increases the share of wHTM households.

[15] The calibrated value of σ, which drives much of the housing consumption decision, is between the value from Kaas et al. (2021) (0.717 for Germany) and Yang (2009) (0.8615 for the USA).

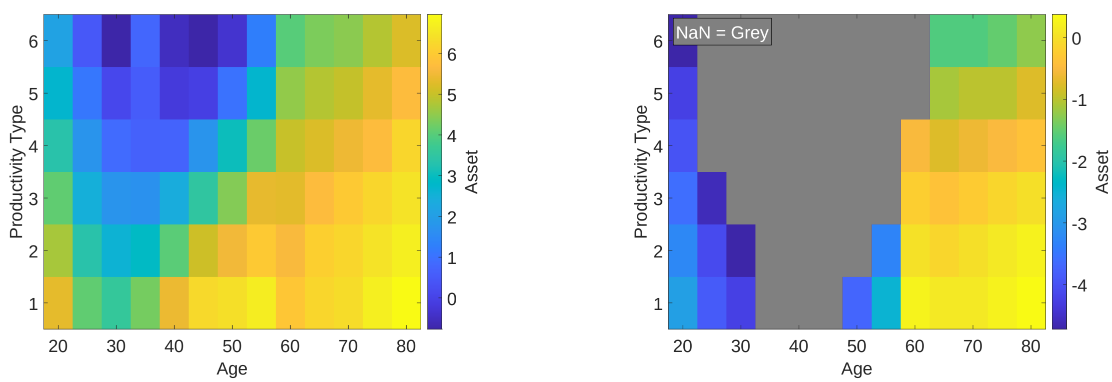
7 Results

This section reports results from my benchmark model.

7.1 Renting or Owning?

Figure 10 presents the policy function for housing as a heatmap, illustrating the transitions between renting and owning. Panel 10a displays the minimum asset level required for households, based on their age and productivity, to transition from renting to owning in the next period. Conversely, Panel 10b shows the minimum asset level for current home owners to transition to renting in the next period. The gray areas represent age-productivity combinations where households never choose to rent in the next period, regardless of their current asset level. [16]

Figure 10: Transition between Owning and Renting



(a) Renters **(b)** Owners

Notes: Heatmap of the housing policy function. Panel (a) shows the transition from renting to owning. Panel (b) shows the transition from owning to renting. Negative liquid assets for renters are only possible after the purchase.

The transition from renting to owning, as shown in Panel 10a, reveals that households with higher productivity require fewer savings to become home owners. The variation over the life cycle for high-productivity households is driven by two factors: the hump-shaped efficiency profile, which peaks around age 45, and the substantial bequests received by productive households between ages 40 and 60. These income sources enable households to purchase homes with minimal or even negative assets, despite the borrowing constraints imposed on renters that prevent such cases.

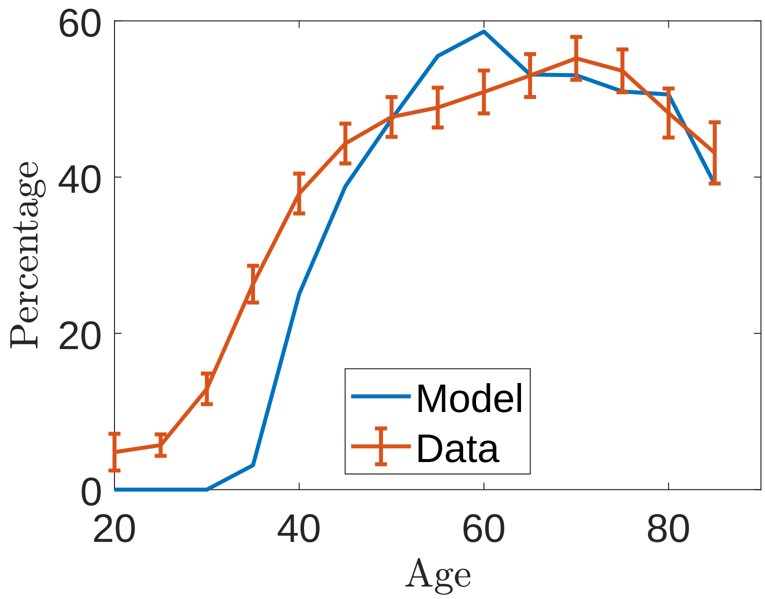
[16] The negative asset threshold for the highest productivity type in Panel 10b is a theoretical construct, as pensioners are not permitted to hold negative assets.

In contrast, the transition from owning to renting, depicted in Subfigure 10b, follows a different pattern. All households are unlikely to transition to renting during the middle of their life cycle, regardless of their savings. High-productivity households want to stay home owners for the longest time, while low-productivity households only want that for two periods when their household is at its largest. In all other periods, lower-productivity households may choose to rent if their asset levels are sufficiently low, as this allows them to increase their consumption. Much of the movement over the life cycle, which will be explored in subsequent sections, can be explained by these two graphs. High-productivity households tend to become home owners, but if they experience adverse shocks in the future, they may transition to renting.

7.2 Home Ownership over the Life-Cycle

A key observation from the data is the trajectory of home ownership rates over the life cycle, a pattern the model can replicate. Figure 11 compares the empirically observed trend with the model's predictions. In calibrating the model, I place emphasis on matching the home ownership rate, though I do not target individual points along the life cycle. Instead, I focus on averages across distinct life-cycle stages. The model successfully captures several distinct patterns evident in the data. Notably, the trajectory exhibits a hump-shaped form: early in life, agents must save to afford a home, while later in life, some sell their homes, leading to a decline in the home ownership rate.

Figure 11: Home Ownership Rate over the Life-Cycle



Notes: Data from SOEP. The y-axis shows the percentage of home owners.

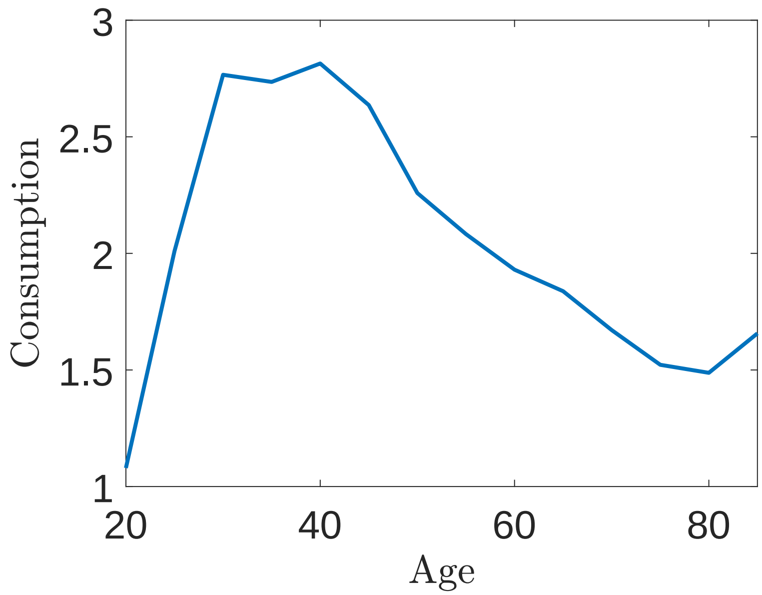
However, Figure 11 highlights a notable discrepancy in the early stages of life. In Germany, some individuals own homes as early as age 20, a scenario that is absent in the model. This limitation arises because all agents in the model begin with zero assets, receive no inter-vivo transfers, and face a minimum equity requirement. Consequently, they must first accumulate sufficient savings to secure a mortgage and purchase a home. The model aligns more closely with the data in the later stages of life. In particular, during retirement, the model effectively captures the downward trend in home ownership rates, mirroring the observed data.

7.3 Consumption over the Life-Cycle

Over the course of their lives, households in my model make consumption and savings decisions in each period, taking into account their household equivalence scale (see equation 6.1). Their consumption is divided between two categories: non-durable goods and housing services.

7.3.1 Non-Durable consumption

Figure 12: Non-Durable Consumption over the Life-Cycle



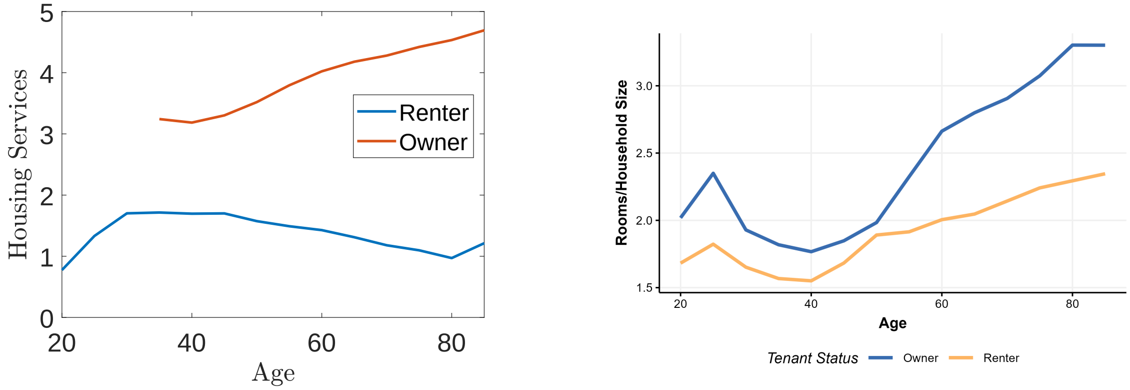
Notes: Non-durable consumption is normalized using the equivalent scale.

Figure 12 shows the average non-durable consumption by age, adjusted for the equivalence scale. Non-durable consumption rises sharply during the first two periods of the life cycle, followed by a sharp decline during middle age. It is only in the last two periods, when households are certain they will not live beyond the next period, that consumption increases drastically again. This figure goes against what a frictionless life-cycle model would suggest. Households do not smooth consumption perfectly. They maintain a buffer stock to mitigate longevity risk, which they only utilize in the last two periods, when death is almost certain to occur.

7.3.2 Housing Services

Housing services serve as a proxy for the number of rooms, which are not explicitly modeled. Figure 13 illustrates the average consumption of housing services by tenant status over the life cycle.

Figure 13: Housing Services over the Life-Cycle



(a) Model

(b) Number of Rooms by Household Size

Notes: Panel (a): Housing services are normalized using the equivalent scale. The orange line (owner) only starts at 35 because nobody younger owns a home. Panel (b) is equivalent to Panel (b) of Figure 4.

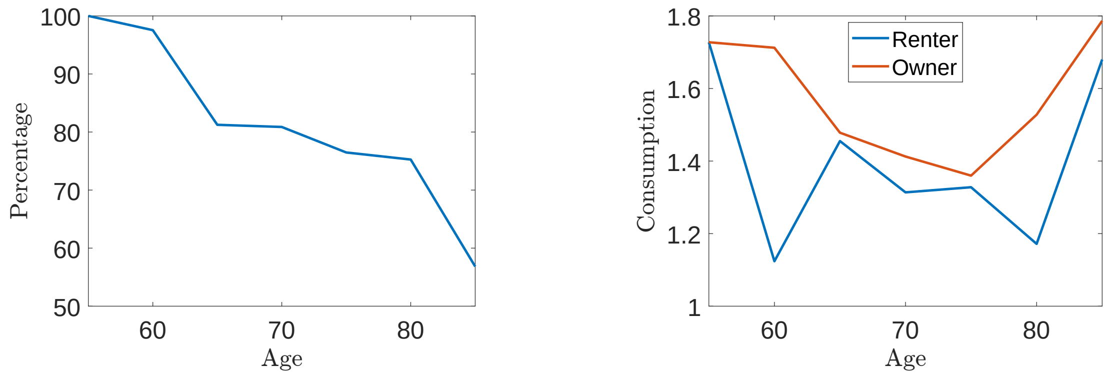
Panel (a) of Figure 13 shows that renters' consumption of housing services declines with age, whereas homeowners experience a substantial increase as they grow older. The analysis adjusts for the household equivalence scale, making it directly comparable to Figure 4b, which is reproduced here for convenience. As a result, the model can qualitatively replicate the lack of downsizing behavior among German home owners, a pattern that is evident in the data.

7.3.3 Selling or Staying: Life After 55

One advantage of this quantitative model over a purely empirical analysis is its ability to explore special cases where data would otherwise be too limited. This subsection examines one such case: the changes in tenant status and consumption patterns of households that are home owners at the age of 55.

Figure 14 presents two key trends: the declining home ownership rate on the left and the evolving consumption patterns on the right.

Figure 14: Owner at 55



(a) Home Ownership Rate

(b) Durable Consumption

Panel (a) of Figure 14 depicts the decline in home ownership rates among households that owned their homes at age 55. The x-axis extends to age 90, as some households choose to sell their homes in the final period, while others retain ownership to leave their property as a bequest. By the age of 85, approximately 40% of these former home owners have transitioned to renting. Once death becomes certain at age 85, most households opt to sell their homes, leaving only about 30% who still own their property. This behavior is a technical feature of the model: since households know they will die in the next period but can continue living in their homes during the current one, there is a strong incentive to sell their property. Meanwhile, Panel (b) of Figure 14 highlights the differences in average consumption between households that retain their homes and those that sell them. This pattern is not intuitive. Households that sell their house and become renters have lower average consumption levels compared to households that stay in their house. There is a selection effect due to bad productivity states and resulting low income in the households that sell their house. The relation between productivity states and willingness to sell can be observed in Panel (b) of Figure 10. At 60, when agents draw their last productivity state, those who become renters at some point after 55 have an average productivity level of 4.3, while stayers have an average productivity of 5.9.[17] These households would have even lower consumption levels if they had stayed home owners.

[17]The population average is normalized to 5. So that 1 asset equals one gross yearly income.

8 Change in the Real Estate Transfer Tax

To evaluate the impact of a reduction in the real estate transfer tax on consumption, I will decrease τ_h by 1 percentage point. First, subsection 8.1 compares the benchmark equilibrium with the new steady state. Section 8.2 will examine the transition dynamics between these steady states. This transition is particularly informative about the mechanism at work, because it involves households that did not anticipate the policy change when making decisions prior to the reform.

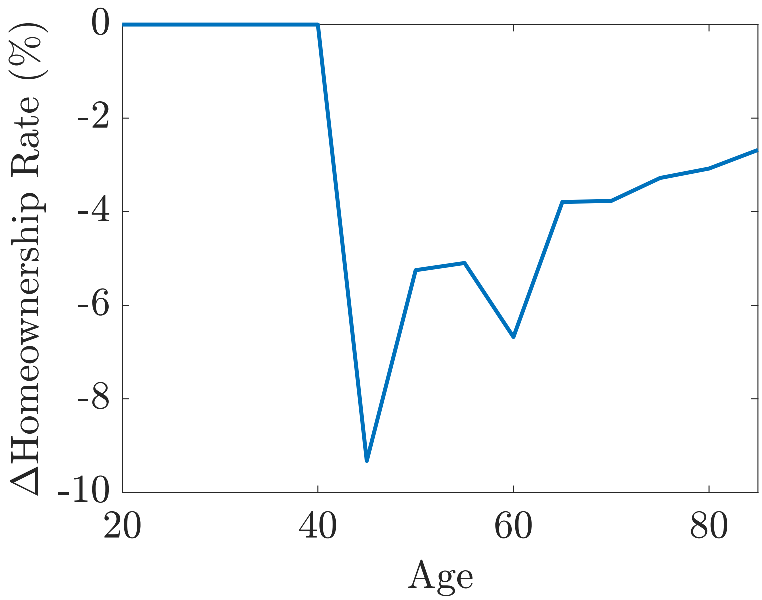
8.1 Steady State Comparison

Since the government has reduced the real estate transfer tax, it has to increase the labor tax to balance its budget. A 1 percentage point reduction in the transfer tax leads to a 1.1 percentage point increase in the flat tax levied on labor income. In section 7, I did not address prices since they are normalized to one. In this context, prices are only meaningful in relation to other prices. What exactly prices look in the new steady state depends on whether the government has to balance its budget. If the government does not increase τ_l, house prices increase by 1.5%. Qualitatively, this aligns with the findings of Dolls et al. (2025), who show that real estate transfer taxes suppress house prices. In my counterfactual experiment, lowering the transfer tax boosts housing demand. The increase in demand does not come from prospective home buyers but from renters. Equation 6.4 shows that the competitive rental company also incurs τ_h and passes it on to renters. With a 1 percentage point decrease in the transfer tax, assuming for now that house prices do not change, rents decrease by $\frac{\Delta\tau_h}{1+r}$ because the rental company can purchase houses cheaply. In the new steady state without a balanced budget, house prices increase by 1.5%, but the other relevant determinants of rents (r and δ) stay constant. This leads to 2.6% lower rents. However, once the government increases τ_l the excess demand is reduced and house prices equal 1 again. Rents in the new steady state are 4.1% lower than in the benchmark, but as households pay higher taxes on their wage income, their housing demand decreases. The rest of this subsection will focus on the balanced budget steady state.

8.1.1 Home Ownership Rate

The overall home ownership rate decreases by 4.8% (from 31.75% to 30.23%). Figure 15 highlights the changes in the home ownership rate across different stages of the life cycle.

Figure 15: Change in Home Ownership Rate



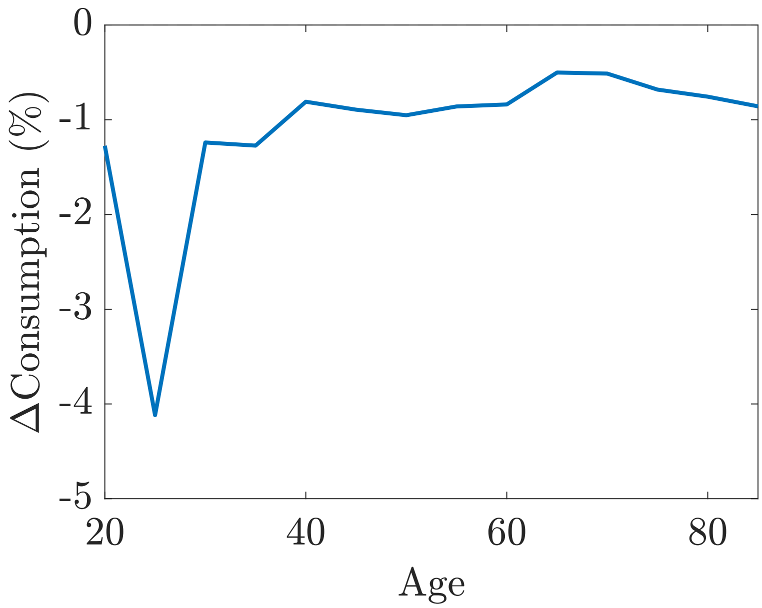
Notes: The y-axis shows the difference in home ownership rate between steady states.

While the difference in the home ownership rate is zero until the age of 40, the home ownership rate decreases in the counterfactual scenario. This difference is due to two effects: households pay higher labor taxes, and renting is cheaper. Afterwards, the difference decreases but is still -2.5% at the age of 85. The decreasing difference in the home ownership rate is mostly due to slower accumulation of savings in the counterfactual scenario.

8.1.2 Consumption

Figure 16 illustrates the change in average consumption by age between the benchmark scenario and the counterfactual.

Figure 16: Change in durable Consumption



The difference in consumption, apart from age 25, dithers around -1%. The difference is larger in the early stages of the life cycle as these are the years where all households only consume and rent and there are no home owners. Since the income is higher in the benchmark scenario, they can consume much more, and households in the counterfactual have to save more if they want to buy a house.[18]

The steady-state comparison reveals several key outcomes. Once the government balances its budget, real estate prices are the same as in the benchmark, the overall home ownership rate is lower, aggregate durable consumption decreases by around 1%, and the timing of when renters become owners is delayed, compared to the benchmark case.

8.2 Transition

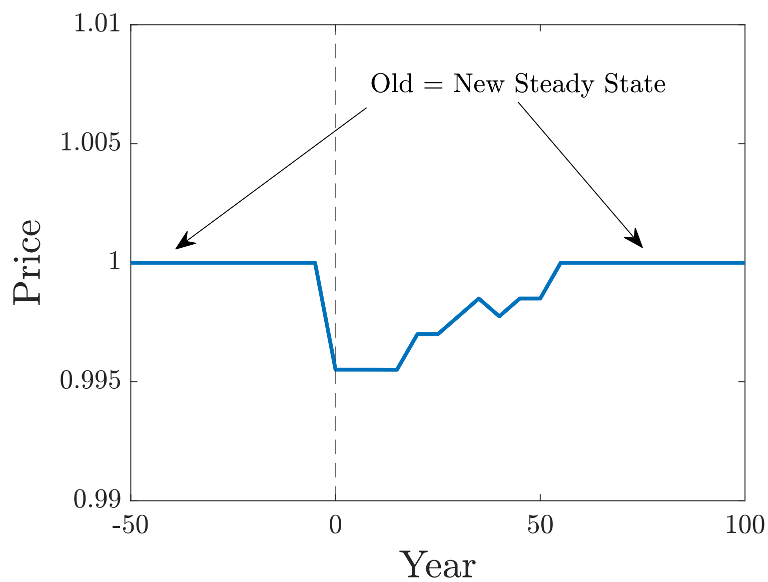
I have demonstrated in the previous section that the differences in steady state are especially pronounced for younger households. By increasing the tax on labor income, the government makes everyone slightly poorer, especially younger households that rely on their labor income; this has strong consumption effects. Next, I analyze the transition between steady states. During the transition, there are generations who were born before the policy change and made optimal choices under the assump-

[18]Appendix A.3.1 depicts the change in consumption for the partial equilibrium setting where the housing market clears, but the government does not balance its budget. The effect on consumption almost disappears.

tion that both the transfer and labor tax would remain unchanged.

I continue to assume that all tax changes are unexpected. Moreover, the government knows *ex ante* which tax rate it will need to balance the budget in the new steady state and sets it at the same time it reduces the transfer tax. The housing market has to clear in every period, and since supply is sluggish, prices have to adjust to keep up with changing demand from both home owners and renters. The transition to the new steady state is complete once house prices stabilize and no longer change. Figure 17 illustrates the evolution of house prices during the transition between steady states. The x-axis represents the time it takes to reach the new steady state.

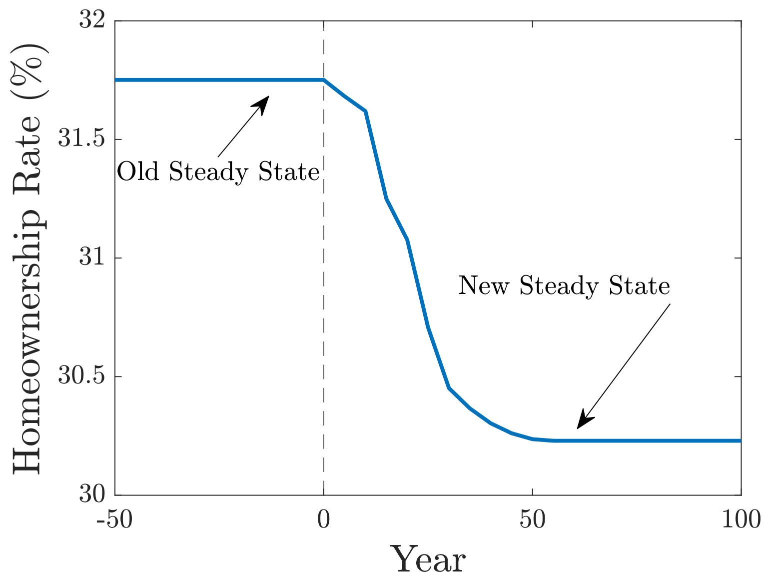
Figure 17: Net House Prices during the Transition



Notes: These are net prices not including the new tax rates. The gross prices for sellers and buyers can be found in Appendix A.3.2.

The changes in house prices during the transition are necessary to clear the housing market. With these price changes, households adapt their behavior in addition to responding to the lower transaction tax. Initially, there is a decrease in house prices by about 0.5%, followed by a convergence to the new steady-state price, which is equal to the old steady state price. Different forces are at play: First, it becomes cheaper for home owners to sell their homes, which increases supply. Second, it becomes cheaper for renters to become home owners, which increases demand. Third, rents become cheaper. Since the representative firm in the rental sector also has to pay the transaction cost (see equation 6.4), this increases demand for housing services. Finally, the increase in the labor tax affects the available budget for both renters and home owner negatively, which decreases demand. Since prices decrease after the policy change, the increased supply by elderly home owners and decreased demand due to a reduction in disposable income dominate. The same dynamics can be observed in the aggregate home ownership rate in Figure 18.

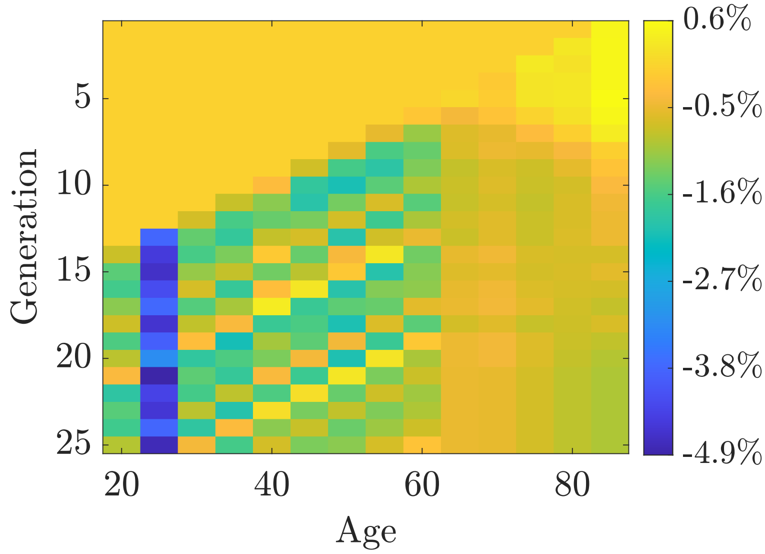
Figure 18: Home Ownership Rate over the Transition



The home ownership rate decreases because elderly home owners, sell their house in reaction to the policy change, and because the younger generations cannot afford to buy a house. In the new steady state, the aggregate home ownership rate is 1.5 percentage points lower.

The transition also provides an opportunity to examine how the consumption of different generations changes compared to the old steady-state consumption. Since many generations experience the transition, Figure 19 presents these differences as a heatmap, making it easier to identify patterns and variations.

Figure 19: Consumption in the Transition



Notes: The y-axis reports different generations who live through the transition. Generation 1 only experiences the first transition period in their last life cycle period. Generation 14 is the first generation who is fully exposed to the new tax rate when they enter the economy. A graphical representation can be found in Appendix A.3.2

The early generations experience no changes in consumption initially, as the policy change has not yet occurred, and they continue to behave like households in the old steady state.[19] The first generation is only affected in the last period of their lives, when they experience a small increase in consumption. The first few generations generally see an increase in consumption during their final period. However, this trend reverses for subsequent generations, where households are overall worse of in terms of average consumption in comparison to the old steady-state. This decrease in consumption over the life cycle is linked to the higher income tax.

Exploring the transition between the two steady states reveals that focusing solely on the steady states overlooks important dynamics. While the tax rate change appeares to have only negative consumption effects on the aggregate economy when comparing the steady states, the transition highlights that particular generations (those who are already retired) benefit in terms of increased consumption.

[19] A representation of the overlapping generations dynamics during the transition can be found in Appendix A.3.2.

9 Conclusion

This paper examines unintended consequences of changes in the real estate transfer taxes. By integrating household-level data from the German Socioeconomic Panel (SOEP) with regional house price and rent data from Ahlfeldt et al. (2023), I provide new insights into downsizing behavior of elderly households in Germany. Downsizing is interpreted as a form of adjustment in non-durable goods consumption. The analysis shows that increases in the real estate transfer tax discourage home owners from downsizing, even when controlling for local real estate market characteristics such as prices and vacancy rates. Given the scarcity of reliable data on durable consumption, particularly in Germany, I develop a quantitative life-cycle model with explicit housing decisions. The model successfully replicates the empirical observation that home ownership is relatively sticky. For a wide range of wealth, income, and age combinations, home owners rarely choose to transition to renting. Additionally, the model demonstrates that home owners consume more housing services, especially when adjusted for household equivalence.

The model is then used to evaluate the effects of a change in the transfer tax on both macroeconomic aggregates and the consumption patterns of specific generations. A steady-state comparison reveals that a 1 percentage point reduction in the transfer tax does not change house prices only if the government increases the labor tax to balance its budget. The steady-state comparison shows that general equilibrium effects are strong, and both the home ownership rate and consumption decrease due to higher labor taxes. A more detailed analysis reveals that generations who experience the transition period between steady states are particularly affected. House prices initially decrease before gradually converging back to the initial price. The only generations that gain in terms of consumption are those who are already retired and are not affected by the higher income tax.

This analysis demonstrates that policies aimed at generating revenue for federal states from taxing real estate transfers can have broader implications, for example, on consumption. The findings underscore how even small changes in the transfer tax can have disproportionately strong effects on consumption and how these effects vary across generations.

References

AGUIAR, M. AND E. HURST (2013): "Deconstructing life cycle expenditure," *Journal of Political Economy*, 121, 437–492.

AHLFELDT, G. M., S. HEBLICH, AND T. SEIDEL (2023): "Micro-geographic property price and rent indices," *Regional Science and Urban Economics*, 98, 103836.

BANKS, J., R. BLUNDELL, Z. OLDFIELD, AND J. P. SMITH (2012): "Housing Mobility and Downsizing at Older Ages in Britain and the USA: Housing mobility and downsizing at older ages," *Economica*, 79, 1–26.

BARCZYK, D., S. FAHLE, AND M. KREDLER (2023): "Save, spend, or give? a model of housing, family insurance, and savings in old age," *Review of Economic Studies*, 90, 2116–2187.

BAYER, C. AND F. JUESSEN (2012): "The life-cycle and the business-cycle of wage risk—Cross-country comparisons," *Economics Letters*, 117, 831–833.

BECHTOLDT, S., R. FREIER, J. GEYER, AND F. KÜHN (2014): "Acht Jahre nach der Reform der Grunderwerbsteuer: Bundesländer nutzen ihre Spielräume für Steuererhöhungen," *DIW Wochenbericht*, 50.

BUETTNER, T. (2017): "Welfare Cost of the Real Estate Transfer Tax," *CESifo Working Paper Series*, 6321.

BUNDESINSTITUT FÜR BAU-, STADT- UND RAUMFORSCHUNG (2024): "Laufende Raumbeobachtung des BBSR," https://www.bbsr.bund.de/BBSR/DE/forschung/raumbeobachtung/Komponenten/LaufendeRaumbeobachtung/laufenderaumbeobachtung.html [Accessed: (20.11.2024)].

COCCO, J. F. AND P. LOPES (2020): "Aging in place, housing maintenance, and reverse mortgages," *The Review of Economic Studies*, 87, 1799–1836.

DE NARDI, M. (2004): "Wealth inequality and intergenerational links," *The Review of Economic Studies*, 71, 743–768.

DE NARDI, M., E. FRENCH, AND J. B. JONES (2016): "Savings after retirement: A survey," *Annual Review of Economics*, 8, 177–204.

DOLLS, M., C. FUEST, C. KROLAGE, AND F. NEUMEIER (2025): "Who bears the burden of real estate transfer taxes? Evidence from the German housing market," *Journal of Urban Economics*, 145, 103717.

EMPIRICA REGIO (2024): "Marktaktive Leerstandsquote," .

EUROSTAT (2024): "Distribution of population by tenure status, type of household and income group," .

FERNÁNDEZ-VILLAVERDE, J. AND D. KRUEGER (2011): "CONSUMPTION AND SAVING OVER THE LIFE CYCLE: HOW IMPORTANT ARE CONSUMER DURABLES?" *Macroeconomic Dynamics*, 15, 725–770.

FRENCH, E., J. B. JONES, AND R. MCGEE (2023): "Why do retired households draw down their wealth so slowly?" *Journal of Economic Perspectives*, 37, 91–113.

HAN, L., L. R. NGAI, AND K. D. SHEEDY (2025): "To Own or to Rent? The Effects of Transaction Taxes on Housing Markets," *The Review of Economic Studies*, rdaf092.

HANSEN, G. D. (1993): "The Cyclical and Secular Behaviour of the Labour Input: Comparing Efficiency Units and Hours Worked," *Journal of Applied Econometrics*, 8, 71–80.

HURST, E. (2008): "The retirement of a consumption puzzle," *NBER Working Paper Series*, Nr. 13789.

KAAS, L., G. KOCHARKOV, E. PREUGSCHAT, AND N. SIASSI (2021): "Low homeownership in Germany—A quantitative exploration," *Journal of the European Economic Association*, 19, 128–164.

KAPLAN, G., K. MITMAN, AND G. L. VIOLANTE (2020): "The housing boom and bust: Model meets evidence," *Journal of Political Economy*, 128, 3285–3345.

KAPLAN, G. AND G. L. VIOLANTE (2014): "A model of the consumption response to fiscal stimulus payments," *Econometrica*, 82, 1199–1239.

PEKKA, S. (2021): "Wer wohnt wie groß?" *IW-Kurzbericht*, 11.

SCHWERDT, G. (2005): "Why does consumption fall at retirement? Evidence from Germany," *Economics Letters*, 89, 300–305.

STATISTISCHES BUNDESAMT (2025a): "Einkommen und Einnahmen sowie Ausgaben privater Haushalte," https://www-genesis.destatis.de/datenbank/online/url/1e19aa75 [Accessed: (28.07.2025)].

——— (2025b): "Steuereinnahmen: Deutschland, Jahre, Steuerarten vor der Steuerverteilung," https://www-genesis.destatis.de/datenbank/online/url/fd1fe1f1 [Accessed: (03.11.2025)].

YANG, F. (2009): "Consumption over the life cycle: How different is housing?" *Review of Economic Dynamics*, 12, 423–443.

A Appendix

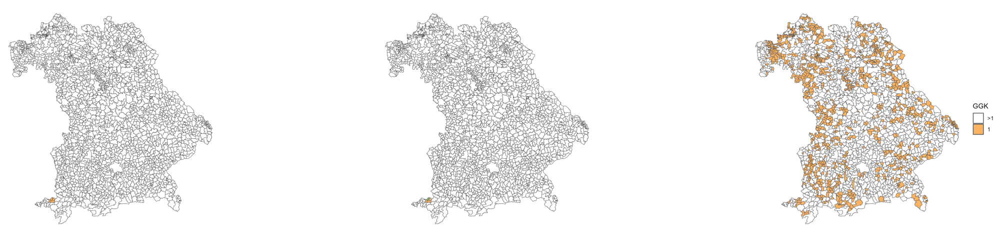
A.1 Data Definitions

Liquid assets are real financial assets and business assets. Illiquid assets are real estate, other assets, and tangible assets.

A.1.1 Matching Procedure

This section gives an example of a matching process for one municipality in Bavaria. The real estate data provides real estate prices and rents for associations of municipalities. Figure 20a shows Argental,

Figure 20: Matching Example



(a) Association of municipalities **(b)** Municipality **(c)** GGK

one of the *Gemeindeverbände* in Bavaria. One of the municipalities of Argental is Gestratz, pictured in Figure 20b in red. Gestratz is assigned Argental's overall real estate price. Gestratz had less than 2000 inhabitants in 2022 which means it is category one in the GGK scale. Figure 20c shows all GGK 1 municipalities in Bavaria in green. This is the information that the SOEP provides. To assign each household a real estate price for their neighborhood I calculate the average over all GGK 1 municipalites.

A.1.2 Summary Statistics by GGK

Table 11: Summary Statistics by GGK

GGK	Variable	Total	Home Owners	Renters
1				
	Age	57	59	52
	Education Completed (Years)	11.6	11.7	11.2
	Income (HH, net, monthly, €)	2,573	2,778	2,105
	Rooms	4.4	5	3.2
	HH size	2.2	2.2	1.8
7				
	Age	55	61	52
	Education Completed (Years)	12.5	13.4	12.2
	Income (HH, net, monthly, €)	2,767	3,708	2,424
	Rooms	3.1	4.2	2.6
	HH size	1.8	2.2	1.8

A.2 Empirical Results

Table 12: Model Summary - Additional Specifications

	Model 3	Model 4	Model 5
Age	−0.064	−0.065	−0.066
	(0.135)	(0.135)	(0.135)
Age^2	0.0004	0.0004	0.0004
	(0.001)	(0.001)	(0.001)
Children	0.084**	0.083**	0.083*
	(0.042)	(0.042)	(0.042)
Education Completed (years)	0.025	0.026	0.026
	(0.023)	(0.023)	(0.023)
Health Status	0.165***	0.166***	0.166***
	(0.063)	(0.063)	(0.063)
Household Size	0.099	0.098	0.098
	(0.098)	(0.098)	(0.098)
Home Owner	−1.730**	−1.474**	−0.266
	(0.761)	(0.733)	(0.736)
ΔRETT	0.151	0.153	0.165
	(0.165)	(0.165)	(0.165)
ΔRETT*Home Owner	−0.521**	−0.530**	−0.563**
	(0.243)	(0.243)	(0.242)
Net Income (log)	−0.060	−0.059	−0.058
	(0.125)	(0.124)	(0.124)
Marital Status:Single	0.304	0.301	0.302
	(0.274)	(0.275)	(0.275)
Marital Status:Widowed	0.662***	0.662***	0.662***
	(0.169)	(0.169)	(0.169)
Marital Status:Divorced	0.550***	0.545***	0.543***
	(0.174)	(0.174)	(0.174)
Marital Status:Separated	0.776***	0.777***	0.777***
	(0.278)	(0.278)	(0.278)
Unemployment Rate (State Level)	0.025	0.028	0.040
	(0.064)	(0.064)	(0.065)
Rooms first Obs.	0.063***	0.063***	0.063***
	(0.016)	(0.016)	(0.016)
SM price (GGK)		−0.131	−0.148
		(0.474)	(0.476)
Rent (GGK)	0.431	0.192	0.505
	(0.700)	(0.878)	(0.787)
Vacancy Rate (GGK)	0.443	0.359	0.438
	(0.512)	(0.559)	(0.529)
SM Price (National)*Home Owner	1.074*		
	(0.632)		
Rent (GGK)*Home Owner		0.886	
		(0.634)	
Vacancy Rate (2010)*Home Owner			−0.230
			(0.797)
Constant	−3.805	−3.406	−3.868
	(4.849)	(4.883)	(4.837)
Observations	61,617	61,617	61,617
# Downsized	624	624	624
Fixed Effects	Year + County*GGK	Year + County*GGK	Year + County*GGK
Log Likelihood	−3,272.480	−3,274.508	−3,276.371
Akaike Inf. Crit.	6,640.960	6,647.016	6,650.743
pseudo R^2	0.035	0.0347	0.0343

Notes: *p<0.1; **p<0.05; ***p<0.01 All models estimates the probability of downsizing next year on a subsample of the SOEP where household heads are between 55 and 85 years old in the years 2006-2020.

In Model 3 where the specification includes national square-meter prices, I cannot include the sole coefficient, since it would be absorbed in the fixed effects and the interaction with home ownership is only significantly different from zero using a 90% confidence interval. The interaction between home ownership and rents (model 4) and vacancy rates (model 5) have no effect that is statistically different from zero. This indicates that only current local real estate prices plays a role in the decision to downsize for home owners, while other aspects of the real estate market such as rents or vacancy rates seem to play no significant role.

Table 13: Average Marginal Effects

	Model 1	Model 2
Age	−0.0007	−0.0006
	(0.0013)	(0.0013)
Age^2	0.000	0.000
	(0.000)	(0.000)
Children	0.0008*	0.0007*
	(0.0004)	(0.0004)
Education Completed (years)	0.0003	0.0003
	(0.0002)	(0.0002)
Health Status	0.0016***	0.0017***
	(0.0006)	(0.0006)
Household Size	0.0011	0.0011
	(0.001)	(0.001)
Home Owner	−0.0056***	−0.0143***
	(0.0013)	(0.0050)
ΔRETT	0.0018	0.0015
	(0.0016)	(0.0016)
ΔRETT*Home Owner	−0.0054**	−0.0051**
	(0.0025)	(0.0025)
Net Income (log)	−0.0005	−0.0004
	(0.0012)	(0.0012)
Marital Status:Single	0.0024	0.0026
	(0.0025)	(0.0026)
Marital Status:Widowed	0.006***	0.007***
	(0.0018)	(0.0019)
Marital Status:Divorced	0.0047***	0.0053***
	(0.0018)	(0.0018)
Marital Status:Separated	0.009***	0.009***
	(0.0041)	(0.0041)
SM price (GGK)		0.004
		(0.0063)
Rent (GGK)		0.0014
		(0.009)
Vacancy Rate (GGK)		0.0034
		(0.0062)
SM Price(GGK)*Home Owner		0.0074*
		(0.0038)

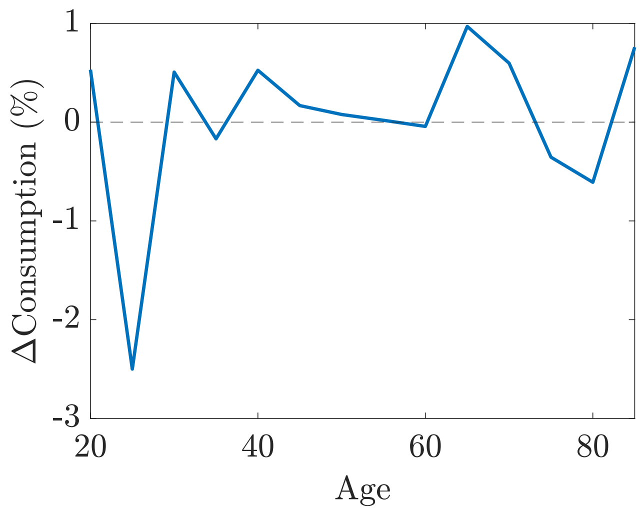
Notes: *p<0.1; **p<0.05; ***p<0.01

A.3 Model

A.3.1 Real Estate Transfer Tax without Balanced Budget

This subsection provides some intuition of how strong the general equilibrium effect is in this model. Without adjusting the flat tax on labor income, the change in consumption is very different from what was shown in Figure 16 in the general equilibrium scenario.

Figure 21: Change in non-durable consumption



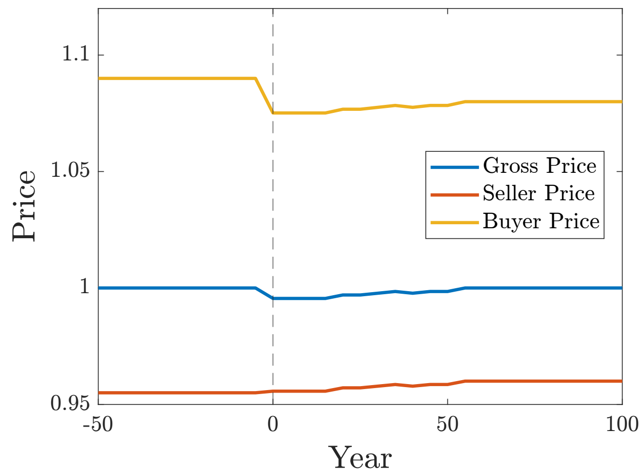
Note: Change in consumption from benchmark case to counterfactual without budget clearing.

The drop in consumption in earlier years persists, while at later stages of the life cycle, consumption increases in this scenario.

A.3.2 Transitions

Transaction tax rates for sellers and buyers are different and are added ontop of the net price. Figure 22 shows the buyers and sellers gross price, including the transaction tax.

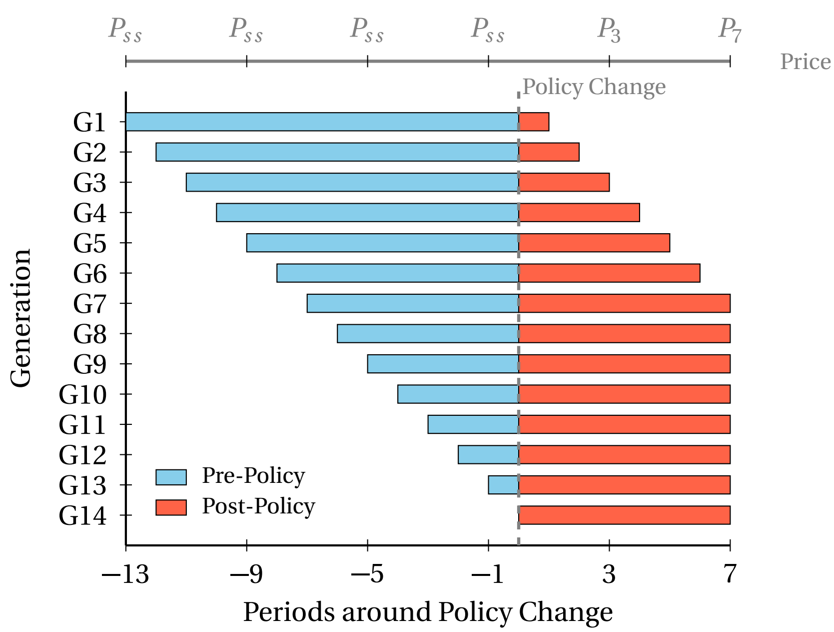
Figure 22: Prices in Transition



Note: Year 0 is the year of the policy change.

Figure 23 illustrates how different generations are affected by the policy change. While *G1* is only affected in their last period, *G14* is never in the *Pre-Policy* era. At the top, we can also see the price evolution while P_{SS} is the old steady state price ($p = 1$), the price differs after the policy change.

Figure 23: Overlapping Generations in Transition



Even though *G14* already internalizes the new tax from the beginning, they are not in the new steady state. This is due to the overlapping generations dynamics of the model. There are still 13 other generations whose actions change house prices and bequests. Only once house prices have converged back to the new steady state price does the behavior of that particular generation resemble the new steady state behavior.