Homeownership and Liquid Wealth Accumulation

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This paper examines whether homeownership promotes long-term wealth accumulation through increased investment in stocks. Using the Swiss rental and real estate market as a reference, I simulate the life trajectories of hypothetical agents who may transition from renting to homeownership once in their lifetime. In a counterfactual scenario, the same agents are exogenously excluded from the real estate market when attempting to buy, thereby creating a clean comparison to the baseline. The findings reveal substantial differences in liquid wealth between "actual" and "counterfactual" homeowners, primarily due to the down payment, while total net wealth remains comparable across the two scenarios. I predict an initial increase of 2 percentage points in the stock share of liquid portfolios on the intensive margin, an effect that is largely mechanical and driven by reduced liquidity. Additional capital gains from higher absolute stock holdings do not meaningfully contribute to wealth accumulation. Ultimately, the main drivers of inequality between homeowners and tenants are exogenous financial conditions and the role of real estate as a saving commitment device.

JEL: D01, D10, D15, G11, G50, G51, R21

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I. Introduction

Previous economic literature has emphasized the potential positive effect of homeownership on households' stock shares in their financial portfolios, at the intensive margin. This relationship originates from risk aversion and diversification motives, under the assumption that real estate assets are less volatile than stocks. While this effect has been analyzed in the short term or around the time of a home purchase, to my knowledge, no study has examined the long-term consequences.

In this study, I develop a life-cycle model based on a simplified Swiss setting, where agents decide on consumption, homeownership and portfolio composition. Agents' life trajectories are simulated under two scenarios. In the baseline scenario, agents can purchase a home once in their lifetime, provided they can afford it. In the counterfactual scenario, agents attempting to purchase a home are exogenously and unanticipatedly excluded from the real estate market for the remainder of their lives. This approach generates a clean counterfactual for the homeownership decision, as agents' life cycles are identical in both scenarios up to the point of the home purchase. In both scenarios, agents can allocate their liquid savings between a risk-free and a risky asset.

I divide the analysis of the results into two parts. First, I show that homeowners in the baseline scenario do not accumulate substantially more liquid or total wealth than in the counterfactual scenario. Only during retirement does homeownership ensure a more controlled depletion of wealth. The higher lifetime wealth observed among homeowners compared to life-long tenants is largely attributable to more favorable initial economic conditions and subsequent income growth. In the second part of the analysis, I focus on the evolution of risky asset shares and their implications. The simulation results confirm previous findings: I document a positive effect of homeownership on the share of stocks in agents' liquid portfolios, with an estimated increase of 2 percentage points at the time of the home purchase. However, two caveats qualify this finding. First, no agent begins participating in the stock market after purchasing a home – the effect operates exclusively on the intensive margin, among agents who already hold stocks.

Second, the increase on the intensive margin is largely mechanical: agents have less liquidity following the down payment and leave their absolute stock holdings unchanged. These results suggest that individuals base their portfolio decisions on total net wealth rather than solely on liquid wealth. Accordingly, I find no evidence that cumulative returns from higher relative stock holdings widen the wealth gap between homeowners and tenants.

Several studies have documented the potential positive effect of homeownership on households' stock holdings at the intensive margin. The underlying mechanism relies on standard portfolio theory under CRRA preferences: if housing risk is lower than equity risk, homeowners should optimally allocate a higher share of their liquid wealth to stocks, conditional on participation. This argument was first formalized by Yao and Zhang (2005), who also show that homeownership reduces the propensity to participate in the stock market, as the increased exposure to housing risk deters entry. Subsequent empirical studies have tested and qualified these predictions. Using SHARE data, Cho (2014) challenges the theoretical predictions and show that homeownership has a negative impact on conditional risky shares of liquid portfolios in Switzerland and other countries with well-developed mortgage markets. The author suggests that the high exposure to mortgage risk forces homeowners to lower investments in stocks. However, Cho (2014) does not find a negative effect of homeownership on the stock market participation. Chetty, Sándor and Szeidl (2017) find that increases in housing wealth net of mortgage debt are associated with higher stock shares. Increases in gross property values reduce stock shares, as households need larger mortgages and to tie a larger fraction of their total wealth to housing and its associated risk. In his model on the Swedish setting, Vestman (2019) predicts a positive effect of homeownership on stock shares and lower stock market participation for a given wealth level, but fails to find empirical evidence supporting these predictions. In contrast, using quasi-experimental variation in homeownership in Sweden, Sodini et al. (2023) document an increase in stock shares following home purchase, particularly among older cohorts. The authors also attribute a wealth-building effect to this increase. Felici and Fuerst (2023) provide a more nuanced view, showing that the relationship between homeownership and stock shares depends on the intended use of the property — with negative effects when housing primarily serves as a consumption good rather than a financial asset. My paper contributes to this strand of literature by predicting an increase in the share of stocks in liquid portfolios. However, I show that this change is mostly dictated by the lower liquidity following a down payment requirement. Moreover, in presence of the diversification mechanisms described above, the increase in the share of total net wealth invested in risky assets does not play a relevant role in the long-term evolution of wealth.

A related literature has highlighted the role of illiquid wealth in constraining households' financial decisions. In particular, Kaplan, Violante and Weidner (2014) introduce the concept of "wealthy hand-to-mouth" households, who hold considerable illiquid wealth, but little to no liquidity. Attanasio et al. (2020) find that the wealthy hand-to-mouth framework is insufficient to explain why homeowners hold little liquid wealth despite the availability of high-return liquid assets. They incorporate temptation into individuals' preferences and show that illiquid savings, such as homeownership, help mitigate self-control problems. Jansen and Werker (2022) demonstrate that illiquidity can lead to both suboptimal asset allocation and suboptimal consumption. My results contribute to this literature by showing that homeowners are unable to fully offset the decline in liquid wealth resulting from the down payment. Nonetheless, the tighter liquidity does not hint to lower absolute investments in risky assets, provided positive stock holdings prior to the home purchase.

Finally, the present study also contributes to the literature on the role of homeownership in shaping wealth inequality, and specifically rejects one potential channel through which the wealth gap between homeowners and tenants might widen. Housing is widely recognized as a key driver in shaping wealth inequality within and across populations (Kaas, Kocharkov and Preugschat, 2019; Fuller, Johnston and Regan, 2020; Garbinti, Goupille-Lebret and Piketty, 2021; Blanchet and

Martínez-Toledano, 2023). Cross-country differences in homeownership rates are substantial and are often shaped by institutional factors such as housing market conditions, credit availability, taxation, and house price levels (Christelis, Georgarakos and Haliassos, 2013). Empirically, homeowners are consistently found to be wealthier than tenants, although this relationship is often established ex-post and may largely reflect selection effects (Di, Belsky and Liu, 2007; Turner and Luea, 2009; Wainer and Zabel, 2020). Identifying the causal sources of the wealth gap between long-term homeowners and tenants is particularly challenging, given the endogeneity of both the homeownership decision and subsequent portfolio choices. Blundell et al. (2016) compare wealth patterns of older households in the US and England. The authors find that English households accumulate wealth during retirement, via a more rapid appreciation of their housing wealth. Recent work by Paz-Pardo (2024) provides new evidence on the role of homeownership as a commitment device for saving, showing that cohorts born between the 1940s and 1960s accumulated substantially more wealth over the life cycle due to housing investments. In contrast, younger generations, facing higher barriers to entry in the real estate market and displaying weaker preferences for homeownership, accumulate lower levels of wealth. My paper confirms the pivotal role of homeownership as saving device, especially during retirement.

The rest of the paper is organized as follows. Section II outlines the real estate institutional setting in Switzerland. In Section III I present the stylized model, the solution method and the calibration parameters. Moreover, I compare the performance of the simulation with real world data. I then discuss the results of the simulation in two parts. Section IV analyzes the effect of homeownership on liquid and total wealth over time. Section V presents the evolution of the portfolio composition since the home purchase. Section VI concludes.

II. Institutional Setting

Switzerland exhibits one of the lowest homeownership rates globally. According to the Swiss Federal Statistical Office, in 2023 61% of households resided in rented dwellings, with the proportion exceeding 80% in urban areas (Federal Statistical Office, 2025). The persistently low rate of homeownership has been attributed to a combination of high real estate prices, restrictive borrowing conditions, and specific fiscal incentives (Bourassa and Hoesli, 2010). In particular, housing costs for owners and tenants are often of comparable magnitude due to the so-called *imputed rental value* tax. Introduced in 1934 as a temporary fiscal measure to bolster state finances during the Great Depression, this tax increases homeowners' taxable income by an amount corresponding to 60% to 70% of the estimated market rent the property would command if let. The abolition of the imputed rental value tax has been a recurring subject of political debate. In late 2024, both chambers of the Swiss Parliament agreed on eliminating this tax, with a nationwide referendum expected to take place during 2025.

A distinctive feature of the imputed rental value tax regime is the possibility for homeowners to deduct mortgage interest payments from taxable income. Consequently, the system generates incentives for households to avoid fully repaying their mortgages. This is feasible in Switzerland due to the existence of two distinct mortgage types. The first, referred to as a type 1 mortgage, finances up to two-thirds of the property's market value. This loan is not subject to amortization requirements, allowing borrowers to indefinitely service only the interest payments. If the type 1 mortgage combined with the down payment does not suffice to cover the purchase price, borrowers must contract a type 2 mortgage. This secondary loan must be repaid within 15 years through annual installments comprising equal principal repayments plus interest. Ideally, deductions from mortgage interest payments offset the additional taxable income generated by the imputed rental value. However, whether homeowners ultimately face a higher or lower tax burden than tenants depends on individual circumstances. Moreover, property acquisition in Switzerland requires a minimum down payment of 20% of the property's value. To meet this requirement, buyers may draw upon their occupational pension wealth. While the use of pension assets for this purpose is widespread, it is not universal, and recent regulatory reforms have reduced the attractiveness of pension fund withdrawals (Bütler and Stadelmann, 2020).

Taken together, these institutional features of the Swiss housing market offer three key advantages for the modeling of a stylized economic framework. First, the low prevalence of homeownership implies that life-long tenancy is neither exceptional nor unrealistic. Second, the widespread practice of maintaining a consistent portion of the total mortgage as outstanding eliminates the need to model a repayment scheme. Finally, given that housing costs for owners and tenants are, on average, comparable for a given dwelling, the need for strong assumptions regarding per-period housing expenditures is mitigated. This facilitates the direct comparison of homeowners and tenants within the model.

III. Model and Calibration

A. Model

I build on the model introduced by Cocco (2005) with two types of consumption goods, i.e. non-housing consumption $C_t > 0$ and housing consumption $h_t > 0$, measured in square meters. The utility function is assumed to be additively separable and exhibits constant relative risk aversion (CRRA). Agents live up to T periods and work from $t = 1$ until N, with $T > N$. In each period, they face a survival probability π_t of reaching the next period, with $\pi_T = 0$. In case of death, agents may leave a bequest represented by their total net wealth W_T. Thus, agents' preferences are expressed by

$$U = \mathbb{E}\left[\sum_{t=1}^{T} \pi_t \beta^{t-1} \frac{(C_t^{1-\eta} h_t^{\eta})^{1-\gamma}}{1-\gamma} + (1-\pi_t)\beta^{t-1}\theta \frac{(W_t + k)^{1-\gamma}}{1-\gamma}\right], \tag{1}$$

where η determines the relative preference for housing consumption versus non-housing consumption, β is the time discount factor, θ is the bequest intensity factor, γ represents the coefficient of relative risk aversion, and k is a curvature parameter ensuring that bequests are profitable only above a minimum, as in De Nardi, French and Jones (2010).

Non-housing and housing consumption are financed through income and liquid savings. The income process is given by

$$Y_t = \begin{cases} \tilde{\epsilon} Y_{t-1} & t \leq N \\ \phi Y_N & t > N \end{cases} \tag{2}$$

where $\tilde{\epsilon}$ represents a random permanent income shock. Upon retirement, income becomes deterministic and is set to a fraction ϕ of the last working-period income. Since I do not explicitly model the Swiss pension system, the calculation of retirement income is significantly simplified compared to the reality. I assume a fixed value for ϕ, which is identical for all individuals.

Agents choose different types of consumption bundles depending on their ownership status. Tenants select both non-housing and housing consumption in each period. Once in a lifetime, they may purchase a home of a desired size, thereby becoming homeowners. Homeowners, in turn, can only choose non-housing consumption, as their housing consumption remains fixed. A challenge that arises from fixing the housing level for homeowners is the risk of default. However, by making simulated agents highly averse to default, the likelihood of such events remains small. I adopt a simplified representation of the Swiss real estate market. Real estate prices P_t are stochastic with $\mathbb{E}[P_t - P_{t-1}] > 0$. Home purchases are modeled not only as once-in-a-lifetime events, they are also intended solely for owner-occupation, and must occur before retirement. To account for market imperfections, purchasing a home smaller than 30 square meters is not permitted. This also reflects the fact that fractional property ownership is uncommon in Switzerland. Also, homebuyers must pay a fraction δ of the total housing value $P_t h_t$ as down payment. To enable better comparison of agents in the baseline and counterfactual scenarios and to reduce the number of possible life patterns, I impose that agents cannot resell their property. When agents buy a property, they convert part of their liquid wealth into illiquid housing wealth, defined as the value of the real estate net of the mortgage. In the period of the purchase, the mortgage value is equal to $(1-\delta)P_th_t$, and, consequently, net housing wealth is equal to δP_th_t. Since the size of the property is fixed for the remainder of the agent's life, it becomes irrelevant in determining the development of housing wealth. Instead, the net price of the real estate object is allowed to vary. In the period of the purchase this is equal to δP_t. I assume that the mortgage value remains fixed in all later periods — i.e., there is no refinancing or other adjustment. Consequently, in the following period, the net price is given by $P_t - (1-\delta)P_{t-1}$. In order to have a common grid of values when deriving the policy functions, I divide this net price by P_t, thus obtaining the relative net housing price ω_t, i.e.

$$\omega_t = \frac{P_t - (1-\omega_{t-1})P_{t-1}}{P_t}. \tag{3}$$

This relative net price enters the homeowner's problem. While I do not explicitly model full mortgage amortization, ω_t is allowed to approach 1 - i.e., the full current property price. In practice, however, no agent ends up with a net housing price equal to the gross price. Moreover, I account for the possibility that ω_t becomes negative if the original mortgage exceeds the current value of the property. Finally, I do not model the Swiss pension system and therefore exclude the use of occupational pension wealth to finance the down payment. Simulating this financing instrument would introduce substantial complexity, as in reality, only some individuals use it and to varying degrees thereby adding two additional choice dimensions.

Homeowners, homebuyers and tenants face different housing costs. Tenants pay rent equal to a fraction ψ_r of the total property value. Homebuyers must cover the down payment (δP_th_t) and the annual mortgage payment ($\psi_o(1-\delta)P_th_t$), where ψ_o represents the fraction of the outstanding mortgage translating into the annual repayment [1]. Finally, homeowners make payments based on the annual

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[1] Other studies also include a transaction cost for home purchases (e.g. De Francisco, 2023). However, since I do not model the possibility of multiple property purchases or sales, I find that transaction costs do not affect the conclusions of this paper. The only effect is to lower the rate of homeownership, given the set of the remaining parameters. Therefore, for simplicity, I have chosen not to include any transaction costs.

repayment of the mortgage. Thus, total housing costs can be summarized as follows

$$H_t = \begin{cases} \psi_r P_t h_t & D_t = 0 \\ [\delta + \psi_o(1-\delta)] P_t h_t & D_t = 1,\ D_{t-1} = 0,\ t \leq N,\ h_t \geq 30, \\ \psi_o(1-\omega_t) P_t \overline{h} & D_t = 1,\ D_{t-1} = 1, \end{cases} \tag{4}$$

where the first case corresponds to tenants, the second to homebuyers, and the third to homeowners. Here, D_t denotes the ownership state at time t.

Savings are allocated between a risk-free and a risky asset (stocks), provided that individuals participate in the stock market. Participation can begin in any period, subject to certain conditions that ensure it is not universal. To enter the stock market, individuals must invest a nonzero amount after covering entry fees, as well as a recurring per-period participation fee (as in Fagereng, Gottlieb and Guiso, 2017). The inclusion of this per-period fee helps generate a more realistic life-cycle portfolio profile.

Thus, accrued liquid savings L_t are given by

$$L_t = S_{t-1} R_f + \alpha_{t-1} S_{t-1} (R_t - R_f), \tag{5}$$

where S_{t-1} represents the end-of-period liquid asset from the previous period, α_{t-1} the relative amount of savings invested in stocks, and R_f and R_t are the gross risk-free and stock market return, respectively.

The budget constraint is given by

$$Y_t + L_t \geq C_t + H_t + S_t + I_t^{\text{Entry}}(1 - A_{t-1})A_t + \alpha_t I_t^{\text{Participation}} \tag{6}$$

where A_t is a binary variable indicating whether the agent is participating in the stock market, I_t^{Entry} is the entry fee for the stock market, and $I_t^{\text{Participation}}$ is the participation fee. Note that agents cannot have negative savings, i.e., they cannot incur debt other than for real estate. Additionally, inheritances are not simulated, meaning that agents start with zero wealth, and initial inequality only stems from stochastic income. Although this assumption may appear inconsistent with the modeling of bequests, it allows me to reduce the sources of initial inequality. Moreover, the receipt of substantial inheritances rarely happens at the beginning of the working life (see, for example, Crawford and Hood, 2016; Elinder, Erixson and Waldenström, 2018; Palomino et al., 2022).

Total net wealth is bequeathed at death. This comprises liquid wealth S_t and net housing value $\omega_t P_t \overline{h}$

$$W_t = S_t + D_t \omega_t P_t \overline{h}. \tag{7}$$

Thus, in each period $t = 0, ..., T$, the value function for tenants and home buyers is given by

$$\begin{aligned} V_t^R(X_t^R) &= \max_{\{C_t, h_t, \alpha_t, D_t\}} \left\{ \frac{(C_t^{1-\eta} h_t^{\eta})^{1-\gamma}}{1-\gamma} + \pi_t \beta \, \mathbb{E}_t[V_{t+1}(X_{t+1})] + (1-\pi_t)\beta\theta \, \mathbb{E}_t \left[\frac{(W_{t+1}+k)^{1-\gamma}}{1-\gamma} \right] \right\}, \\ X_t^R &= \{Y_t, L_t, A_{t-1}\}, \end{aligned} \tag{8}$$

where X_t^R represents the vector of state variables, which includes income, accrued liquid savings, and the binary variable A_{t-1} for the participation in the stock market. Agents decide over non-housing and housing consumption, the amount to invest in equities, and homeownership. After retiring, as well as in the counterfactual scenario, agents cannot decide on homeownership any longer.

For homeowners, the value function is given by

$$\begin{aligned} V_t^O(X_t^O) &= \max_{\{C_t, \alpha_t\}} \left\{ \frac{(C_t^{1-\eta} \overline{h}^{\eta})^{1-\gamma}}{1-\gamma} + \pi_t \beta \, \mathbb{E}_t[V_{t+1}(X_{t+1})] + (1-\pi_t)\beta\theta \, \mathbb{E}_t \left[\frac{(W_{t+1}+k)^{1-\gamma}}{1-\gamma} \right] \right\}, \\ X_t^O &= \{Y_t, L_t, A_{t-1}, \overline{h}, \omega_t\}. \end{aligned} \tag{9}$$

Thus, homeowners decide only over non-housing consumption, and the share of their liquid savings invested in equities. The vector of state variables contains, in addition to the state variables mentioned for tenants, also the size of the owned real estate, as well as the relative net housing price.[2]

B. Solution

I solve the maximization problem by backward induction, partially following the endogenous grid point method (EGM), first proposed by Carroll (2006). EGM is an efficient way to resolve these types of models, as it avoids root finding by calculating the inverse Euler equation. This approach determines current optimal consumption by directly using an interpolation of future consumption, given an exogenous grid of end-of-period assets. For all agent types, non-housing consumption is determined using EGM. For tenants, housing consumption is derived from non-housing consumption via the intratemporal Euler equation [3]. For homeowners, housing consumption is fixed, which simplifies their problem. However, solving the homeowner's problem requires two additional exogenous grids: one for housing size and one for the relative net housing price. For homebuyers, optimal non-housing consumption is also obtained using EGM by iterating over an exogenous grid of housing sizes and comparing the resulting levels of the value function. The housing size that maximizes the value function is selected as the property to purchase. Provided the agent can afford the purchase, the decision to transition to homeownership or remain a tenant depends on the comparison of the value functions.

For all agents, the optimal level of stock holdings (if participating in the stock market) is determined at the beginning of the algorithm through root-finding. Unlike consumption, this choice does not follow an intertemporal Euler equation, and it depends on the level of end-of-period assets, which are exogenous. Moreover, the consumption decision depends on expected future resources, for which stock holdings must be known. Agents participate in the stock market if they can

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[2] The first-order conditions of the value functions can be found in Appendix Section A.A1.

[3] See Appendix Section A.A1

afford the entry and participation costs and attain higher utility by doing so.

Once I have retrieved the policy functions for all periods and agent types, I simulate the lives of 10,000 agents. Although the policy functions consider the probability of surviving to the next period, no simulated agent dies before the last possible period. This ensure the creation of a full panel without attrition.

To generate the lives of homeowners in the counterfactual scenario, I use the same policy function of tenants up to the time of purchase. I assume that agents do not anticipate the exclusion from the real estate market, making the event fully exogenous. This is approach imitates the case of agents in the real world unexpectedly losing access to homeownership —e.g., due to a credit ban. After the exclusion from the real estate market, agents in the counterfactual scenarios switch to the policy function of tenants without the choice of homeownership. These "counterfactual" homeowners thus remain tenants, but the period of the "failed", or attempted purchase serves as a reference point. This approach replicates the actual life cycle of homeowners up to the point of purchase and provides a counterfactual for the homeownership decision thereafter. Finally, note that this is distinct from tenants who are unable to purchase due to monetary constraints. Such tenants continue to follow the policy function in Equation 8, which includes the option of homeownership in future periods.

C. Calibration

Table 1 presents an overview of the values used for calibrating the model. I use external data for the underlying survival probabilities, incomes, prices, and consumption composition. Other parameters are set to match common assumptions or previous results in the economic literature.

Agents enter the model at age 25 and can live for up to 95 periods, i.e., until the age of 120. This long lifespan ensures slower and more continuous dissaving, better matching observed patterns. I use data from the Federal Statistical Office of Switzerland (Federal Statistical Office, 2023), which reports minimal survival probabilities beyond age 105.

Table 1—Table of calibration data and parameters

Parameter	Value	Source
Survival probabilities	π_t	Federal Statistical Office (2023)
Preferences		
Risk aversion	$\gamma = 5$	Standard value
Utility discount	$\beta = 0.97$	Standard value
Housing consumption	$\eta = 0.22$	Federal Statistical Office (2021)
Marginal propensity to bequest	MPB = 0.88	De Nardi, French and Jones (2010); Bommier et al. (2020)
Bequest intensity	$\theta = 23481.5$	Based on MPB = 0.88
Bequest curvature	$k = 1$	Calibration on SHP
Risk-free asset and stock market		
Risk-free interest rate	$R_f = 1.018$	Swiss National Bank (2022*a*)
Entry fee	$I_t^{\text{Entry}} = 0.06\bar{Y}_t$	Target participation rate past age 50
Participation fee	$I_t^{\text{Participation}} = 0.01\bar{Y}_t$	Target participation rate past age 50
Mean return and std. of stocks	$\mu^R = 0.04,\ \sigma^R = 0.16$	Cocco, Gomes and Maenhout (2005); Yao and Zhang (2005) Chetty, Sándor and Szeidl (2017)
Real estate market		
Realized prices	P_t	Swiss National Bank (2022*b*); Wüest Partner (2023); ImmoScout24 - IAZI AG (2024)
Down payment rate	$\delta = 0.2$	Standard in Switzerland
Relative rental price	$\psi_r = 0.0378$	Swiss National Bank (2022*b*); Wüest Partner (2023)
Relative mortgage interests price	$\psi_o = \psi_r$	Assumption
Mean and std. of real estate returns	$\mu^{P_t/P_{t-1}} = 0.03,\ \sigma^{P_t/P_{t-1}} = 0.04$	Swiss National Bank (2022*b*); Wüest Partner (2023)
Correlation between P_t/P_{t-1} and R_t	$\rho(P_t/P_{t-1}, R_t) = 0$	Cocco, Gomes and Maenhout (2005)
Income		
Realized income	Y_t	Federal Statistical Office (2022)
Mean and std. of income growth	$\mu^Y = 0.04,\ \sigma^Y = 0.035$	Historical Statistic of Switzerland (2012)
Replacement rate	$\phi = 0.8$	Calibration on SHP

For the preference parameters, I mostly rely on standard values used in the literature. The risk aversion parameter is set to $\gamma = 5$, and the utility discount factor to $\beta = 0.97$. The bequest intensity parameter θ is derived by first specifying the marginal propensity to bequest (MPB) in the last period. De Nardi, French and Jones (2010) estimate an MPB of 0.88, a value also adopted by Bommier et al. (2020). Yao, Fagereng and Natvik (2015) show that the marginal propensity to consume out of wealth increases with age, reaching 0.09 by age 80. In their model incorporating bequests, Fagereng, Gottlieb and Guiso (2017) estimate an MPB of approximately 0.64[4]. I find that adopting an MPB of 0.88 yields credible and empirically consistent results. Based on this value and following Bommier et al. (2020), I derive $\theta = 23481.5$.

Consumption data from the Federal Statistical Office (Federal Statistical Office, 2021) for 2022 show that housing expenditures account for, on average, 22% of total household expenditures in Switzerland. Accordingly, the relative importance of housing in total consumption is set to $\eta = 0.22$. This choice is in line with values used in prior studies such as Yao and Zhang (2005), Chetty, Sándor and

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[4] My own calculations based on their estimates and parameters.

Szeidl (2017), Vestman (2019), and Paz-Pardo (2024).

Realized income is modeled on historical wages by age and year, using data from the Federal Statistical Office (Federal Statistical Office, 2022). Retirement occurs after 40 periods, i.e., at age 65. In their future expectations, agents consider the average income growth and its variation. Historical data document an average annual growth of 4%, with a standard deviation of 3.5% (Historical Statistic of Switzerland, 2012).

Realized real estate prices for all types of agents are based on historical average square meter prices since 1970 (Swiss National Bank, 2022*b*; Wüest Partner, 2023; ImmoScout24 - IAZI AG, 2024), with an interpolation for the future years. Analogously to wages, agents consider their average growth and variation in their future expectations. Data on real estate prices indicate an average annual return of 3%, with a standard deviation of 4%. I also assume that homeowners consider a small probability of a substantial price drop (–30%). With respect to the share of the current property price paid as rent, I derive $\psi_r = 0.0378$ from the data provided by Swiss National Bank (2022*b*), and Wüest Partner (2023). Due to the specificity of the Swiss setting and for simplicity, I set $\psi_o = \psi_r$. Thus, if the rental square meter price equals the annual mortgage interest payment by square meters, tenants and homeowners incur the same housing costs. The fraction of the house value needed for down payment is set at $\delta = 0.2$, which is the common requirement in Switzerland.

Stock market participation in Switzerland is approximately 36% for the 50+ population, according to Christelis, Jappelli and Padula (2010) and Christelis, Georgarakos and Haliassos (2013), who use SHARE data. To match this target, I set an entry fee of 6% of current average income and a per-period participation fee of 1% of current average income. Equation 6 shows that the amount of participation fees actually paid depends on the relative amount of stocks held in the portfolio. The choice of $I_t^{\text{Participation}}$ results in agents paying, on average, around 100 CHF per period (as a reference, Fagereng, Gottlieb and Guiso (2017) use 300 USD). Instead of relying on Swiss-specific data, stock returns follow assumptions from previous studies, including Cocco, Gomes and Maenhout (2005), Yao and Zhang (2005), and Chetty, Sándor and Szeidl (2017). Thus, the average annual stock return is set at 4%, with a standard deviation of 16%. Following Cocco, Gomes and Maenhout (2005), I also assume no correlation between stock markets and real estate prices. Using data from the Swiss National Bank, I derive an annual risk-free interest rate of 1.08% (Swiss National Bank, 2022*a*).

Two remaining parameters—the income replacement rate during retirement, ϕ, and the bequest curvature parameter, k—are chosen ad hoc to better align the model results with survey data. The flexible choice of the replacement rate is motivated by the absence of an explicit model of the complex Swiss pension system. Actual replacement rates depend on various factors, including years of contributions, voluntary payments into the second and third pillars, decisions about annuitizing third-pillar assets at retirement, and asset performance. As for the bequest curvature parameter k, to my knowledge, no existing study examines bequest behavior specifically in Switzerland. Imposing an exogenous value would therefore constitute an overly strong assumption.

Thus, I use the Swiss Household Panel (SHP) as the matching dataset for the choice of ϕ and k. The SHP is an annual panel survey conducted since 1999, comprising between 3,000 and 10,000 representative households per wave (Tillmann et al., 2022; SHP Group, 2024).[5] It collects extensive information on both individual and household characteristics, including family composition, income, employment, housing conditions, and assets. However, systematic data on total assets are available only in the 2012, 2016, and 2020 waves. I therefore construct a sample based on these three waves, including individuals aged 25 to 95 with non-zero income, resulting in 21,994 unique individuals. I use individual-level information (e.g., personal income or pensions) whenever available. For variables reported only at the household level—such as total assets and property values—I divide values by the number of adults in the household. I find that the best fit with the data is achieved by setting $\phi = 0.8$ and $k = 1$. The choice of the

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[5] SHP data can be requested at `https://forscenter.ch/projekte/swiss-household-panel/?lang=de`

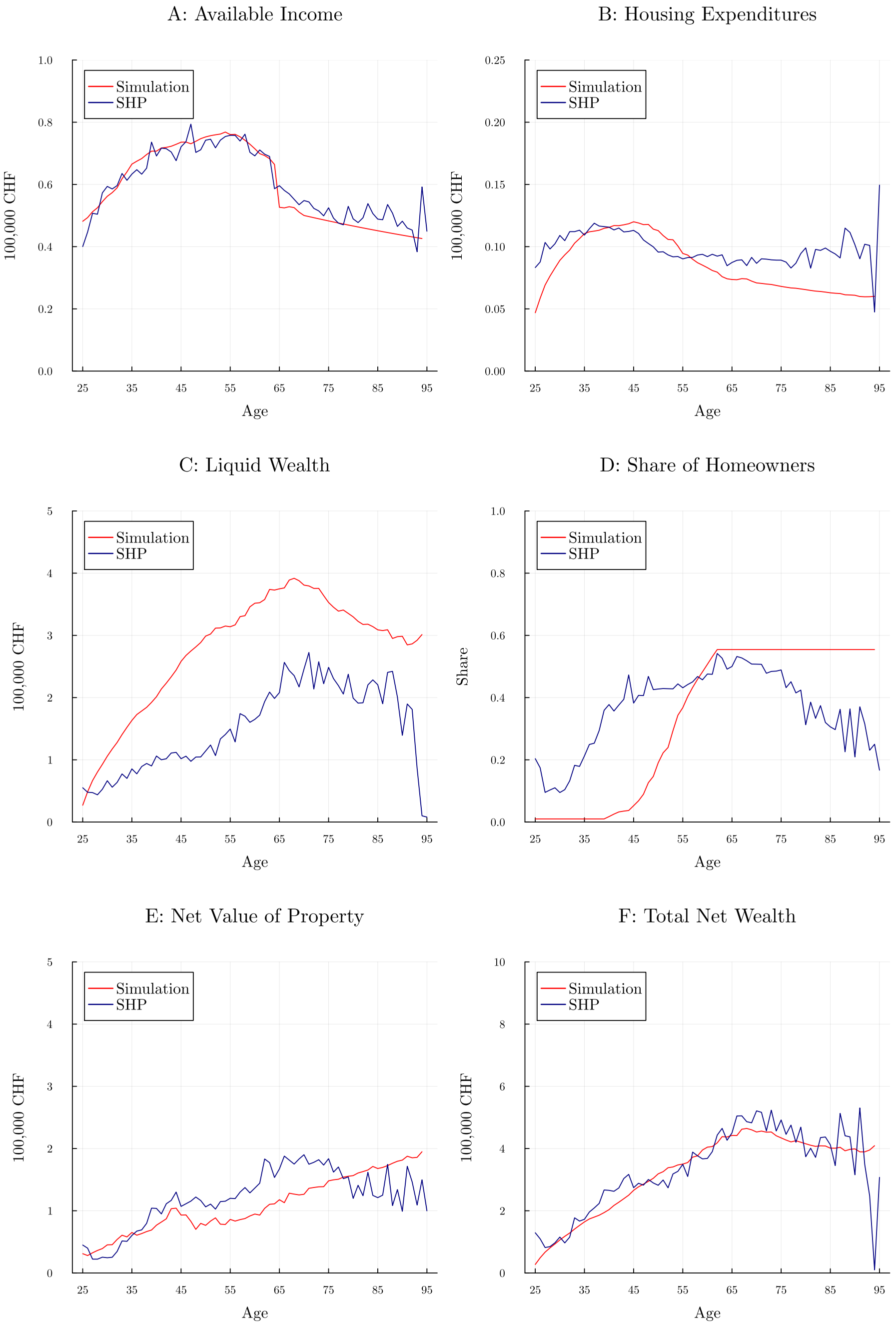

Figure 1. Comparison with Swiss Household Panel

Note: Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%. Data from the Swiss Household Panel (SHP Group, 2024), and from the simulation exercise. Panel E includes only homeowners.

latter parameter implies that the bequest must be at least $1,330$ CHF.[6]

Figure 1 presents the first moments of key financial variables over the life-cycle, comparing the central moments of simulated data with those from the SHP sample. Overall, the profiles exhibit similar shapes across the two data sources. In particular, available income (Panel A) and total net wealth (Panel F) are closely aligned, showing an almost exact match. Housing expenditures are somewhat lower during retirement in the simulation (Panel B). Liquid wealth (Panel C) grows more rapidly in early adulthood compared to the SHP data, while the increase in homeownership (Panel D) is delayed, beginning only after age 40. The SHP data do not indicate whether properties were purchased or inherited. It is therefore plausible that a portion of younger homeowners in the SHP data acquired their properties through inheritance rather than purchase. Furthermore, the SHP data show a decline in homeownership during retirement, whereas the model does not permit house reselling, thus omitting this potential channel of wealth decumulation. Similarly, the net value of property of homeowners (Panel E) decreases at older ages in the SHP data, likely reflecting downsizing behavior. Thus, the highlighted differences between the simulated and survey data can be attributed to deliberate simplifications. Nonetheless, I find that model produces realistic life-cycle patterns.

IV. Evolution of Wealth

The analysis of simulated agents' liquid and total net wealth is structured as follows. First, in Section IV.A, I examine the lifetime wealth trajectories of tenants and owners from both scenarios. Next, Section IV.B explores how wealth evolves relative to the time since property purchase.

A. Life-Time Wealth

Figure 2 presents the average liquid wealth (Panel A) and total net wealth (Panel B) for three groups of agents: owners, counterfactual owners (i.e., owners

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[6] See Bommier et al. (2020) for a derivation.

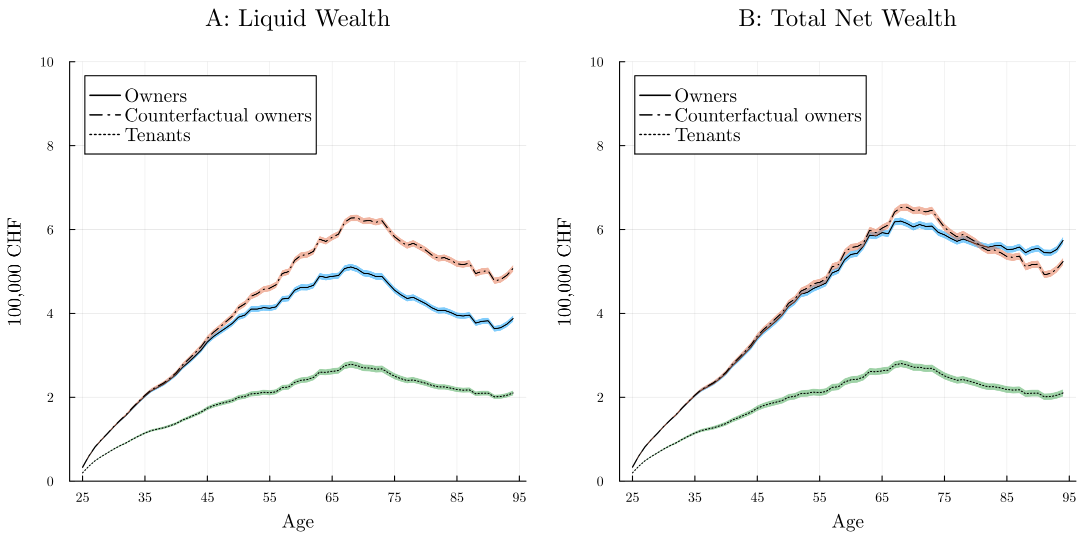

Figure 2. Life-cycle wealth

Note: Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%. Colored areas represent 95% confidence bands.

in the counterfactual scenario), and tenants. Agents beyond the age of 95 are excluded from the analysis, as comparing their wealth evolution with real-world data becomes increasingly unreliable.[7] Group classifications are based on individuals' housing status at retirement. The owners group includes all agents who purchase property by the age of 65, even if they begin as tenants. The tenants group consists of agents who remain renters throughout their working life. The counterfactual owners group corresponds to the owners group in the counterfactual scenario.

Figure 2 reveals that counterfactual owners consistently hold more liquid wealth than actual owners, on average. Before age 45, the wealth trajectories of owners in both scenarios are nearly identical, as home purchases typically begin only after age 40 (see Panel D, Figure 1). Between the ages of 45 and 65—the core working years—counterfactual owners hold, on average, 10% more liquid savings than actual owners. This gap widens to 15% at retirement and eventually stabilizes at approximately 22%. These results suggest that, had owners refrained

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[7] Complete charts including all age groups can be found in Figure A1 in the Appendix.

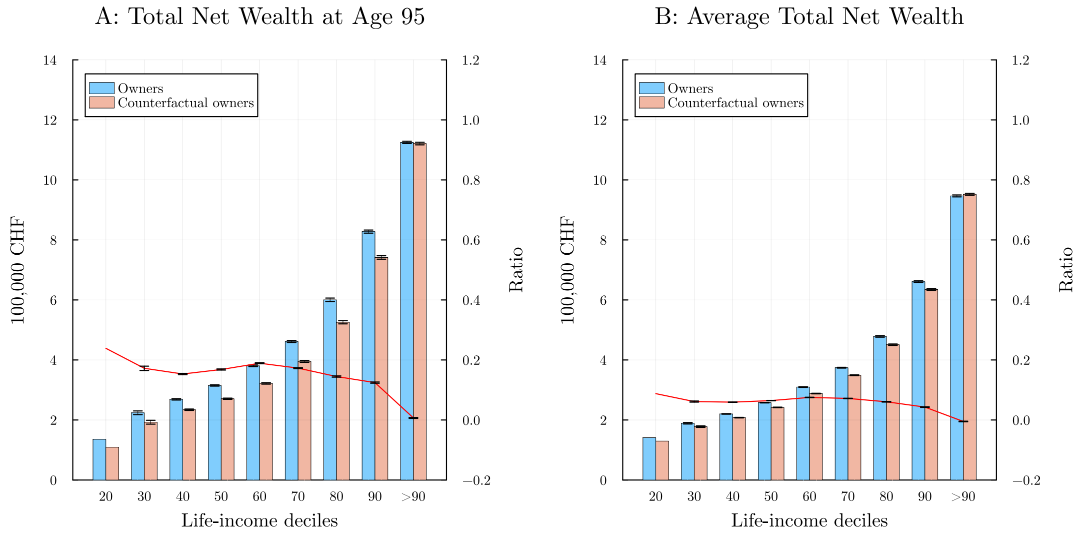

Figure 3. Total Net Wealth by life-income deciles

Note: Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%. The figures display mean values for each group by life-income decile. Error bars represent 95% confidence bands. No error bars for the second decile are available, due to a single observation. The scale of the bar chart is on the left vertical axis, while the scale of the average relative difference between the two groups is on the right vertical axis.

from purchasing a home, they would have accumulated significantly more liquid wealth. In contrast, total net wealth remains largely similar across the two groups for most of the life cycle. It is only in old age—between ages 80 and 95—that owners in the baseline scenario surpass counterfactual owners, with an advantage of less than 5% in total wealth. This late-life advantage is largely due to the model's constraint that prohibits the resale of property, effectively functioning as a commitment device that prevents owners from excessively depleting their wealth. Consequently, conditional on identical initial conditions and retention of the property, homeownership appears to offer only marginal gains in long-term wealth accumulation.

Figure 3 shows average total net wealth levels and the relative difference between the two scenarios by income decile, both at age 95 and over life. For most income groups, owners have around 20% more total net wealth at the age 95 if they succeed in purchasing a property. Over their entire life, the relative difference is less than 10%. The lower income groups who can afford homeownership benefit more from it, while the top income group can almost perfectly compensate for it.

Tenants, by contrast, exhibit the lowest levels of both liquid and total wealth throughout the life cycle. Unlike counterfactual owners, their status is not the result of an exogenous shock, but rather reflects personal preferences or budgetary limitations. Given that all agents share identical preferences in the model, the persistent wealth disparity is likely driven primarily by differences in income trajectories. Moreover, Figure 2 shows that this gap emerges early in life and widens over time. If homeownership were the principal driver of wealth accumulation, one would expect comparable wealth levels at younger ages. To further investigate the determinants of wealth differences, I estimate regressions on liquid and total net wealth at ages 65 and 95. I employ a log-linear specification, which facilitates the interpretation of coefficient estimates in terms of percentage changes. The regression model is based on the following specification:

(10)

$$\ln X_{i,age} = Const + \beta_1 \ln Y_{i,1} + \beta_2 \sum_{z=25}^{age} \frac{Y_{i,z} - Y_{i,z-1}}{Y_{i,z-1}} + \beta_3 D_{i,65} + \beta_4 Counterfactual_i$$

$$+ \beta_5 D_{i,65} Counterfactual_i + \beta_6 A_{i,age} + u_{i,age},$$

where $X_{i,age}$ denotes the dependent variable of interest, $Y_{i,1}$ the initial income, i.e. at age 25, while $\sum_{z=25}^{age} \frac{Y_{i,z}-Y_{i,z-1}}{Y_{i,z-1}}$ captures the cumulative income growth. The homeownership variable $D_{i,65}$ represents assignment to the owners group in either scenario, while $Counterfactual_i$ is a binary indicator for assignment to the counterfactual scenario, and $A_{i,\mathrm{age}}$ is a dummy for stock market participation at the given age. The inclusion of both initial income and cumulative income growth reflects the modeling assumption that income at entry and its subsequent evolution are independent stochastic processes. This distinction enables a clearer identification of their respective contributions to wealth accumulation. An interaction term between homeownership and the counterfactual scenario is also included to capture the specific dynamics affecting agents in the counterfactual scenario.

Table 2— Determinants of wealth

	Dependent Variable							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Indep. Variable	$\ln S_{65}$	$\ln S_{65}$	$\ln S_{65}$	$\ln S_{95}$	$\ln W_{65}$	$\ln W_{65}$	$\ln W_{65}$	$\ln W_{95}$
$\ln Y_1$	1.223***	1.257***	1.210***	1.344***	1.273***	1.308***	1.217***	1.285***
	(0.012)	(0.010)	(0.015)	(0.015)	(0.013)	(0.010)	(0.015)	(0.015)
Counterfactual	0.104***	0.104***			0.000252	0.000252		
	(0.011)	(0.007)			(0.011)	(0.007)		
Cum. income growth		0.938***	0.907***	1.288***		0.965***	0.901***	1.182***
		(0.008)	(0.010)	(0.011)		(0.008)	(0.010)	(0.011)
D_{65}			-0.0545***	-0.377***			0.147***	0.196***
			(0.009)	(0.009)			(0.009)	(0.008)
Counterfactual			-2.48e-13	5.18e-14			-3.46e-13	-3.32e-13
			(0.013)	(0.010)			(0.013)	(0.011)
D_{65} x Counterfactual			0.154***	0.426***			-0.0309*	-0.0893***
			(0.015)	(0.013)			(0.015)	(0.013)
A_{age}			0.0737***	-0.136***			0.0735***	-0.0851***
			(0.010)	(0.011)			(0.010)	(0.011)
Const.	-0.477***	-1.159***	-0.638***	-1.691***	-0.897***	-1.599***	-0.716***	-1.133***
	(0.136)	(0.108)	(0.155)	(0.157)	(0.137)	(0.108)	(0.155)	(0.159)
R-sq	0.445	0.787	0.790	0.871	0.455	0.797	0.801	0.874
N	19758	19758	19758	19852	19758	19758	19758	19878

Note: Robust standard errors in parentheses. Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%.

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

The results of the specifications are reported in Table 2. For the models estimating wealth at retirement, I progressively introduce the explanatory variables. Columns (1) and (5) include only initial income and the counterfactual scenario dummy. Columns (2) and (6) add cumulative income growth. Finally, columns (3), (4), (7), and (8) present the full specification for both liquid and total net wealth at retirement and at age 95.

The results confirm that income is the primary driver of wealth accumulation. The baseline model including only initial income and the counterfactual scenario dummy explains nearly 50% of the variance in both dependent variables. When cumulative income growth is added, the explanatory power increases substantially, with the R^2 coefficient approaching 80%. According to the full model, a 1% increase in initial income is associated with a 1.2% increase in liquid wealth at retirement and a 1.3% increase at age 95. For total net wealth, the corresponding increases are 1.2% and 1.3%, respectively. Income growth also plays a significant role. Conditional on the same initial income, each additional percentage point of cumulative income growth up to retirement is associated with a 0.9% increase in liquid wealth at retirement, and a 1.3% increase at age 95. The effects on total net wealth are of a similar magnitude.

Homeownership is associated with lower liquid wealth, although the effect is relatively modest at retirement, amounting to an average reduction of 5.3%. By age 95, the gap in liquid wealth becomes more substantial (−31.4%), possibly reflecting the fact that homeowners rely on their illiquid housing assets to fulfill bequest motives, thereby reducing the need for liquid holdings. In contrast, total net wealth is higher for homeowners: on average, 15.8% higher at retirement and 21.7% higher at age 95. The coefficient of the interaction term is of opposite sign of that of homeownership. The linear combination between the interaction term and the homeownership dummy is statistically significant across all models. For liquid wealth, this implies that counterfactual owners maintain higher liquid wealth than tenants, even after controlling for income. For total net wealth, it implies that owners in the baseline scenario accumulate more total net wealth than in the counterfactual scenario. Specifically, owners' total net wealth is higher by 12.3% at retirement and 11.3% at age 95, compared to counterfactual owners. Stock market participation also shows a differential effect over the life cycle. At age 65, holding stocks is associated with an 7.6% increase in both liquid wealth and total net wealth. However, by age 95, the coefficients turn negative, with a 14.6% reduction in liquid wealth and a 8.9% reduction in total net wealth. This suggests a limited role of stocks in determining long-term wealth differences.

In summary, the empirical results highlight that wealth accumulation is closely tied to the initial economic disparities and the subsequent evolution of income. While homeownership, stock market participation, and exogenous constraints (such as the counterfactual scenario) influence wealth levels, their effects are secondary. The comparatively low wealth levels of life-long tenants are primarily driven by lower income, which also constrains their ability to purchase property. For those who do buy a home, the trade-off involves reduced liquid wealth but a significant increase in total net wealth. Finally, it should be noted that inheritances may also play a role in the determination of long-term wealth. However, their modeling would only add an additional dimension of heterogeneity among the agents. Also, inheritances could be seen as a part of the initial random income received by the agents. Thus, given the current scope of the paper, I prefer stressing the importance of initial economic conditions, without an exact differentiation of their sources.

B. Event Study

While the patterns presented in the previous section illustrate the long-term effects of homeownership in the agents' life, they do not capture the dynamics following the home purchase itself. To address this, I now restrict the analysis to homeowners from both scenarios. Rather than examining outcomes by age, I compare wealth levels before and after the purchase. This shift in focus allows me to take full advantage of the counterfactual modeling framework by tracking the same individuals across both scenarios. Note that I exclude 100 individuals who purchase a home in the first period. This is necessary because the empirical model introduced later requires at least one pre-purchase observation per agent.

Panel A of Figure 4 shows the trajectory of mean liquid wealth for actual and counterfactual homeowners from five years before to thirty years after the home purchase. Owners' liquid wealth declines at the time of purchase and gradually recovers, mirroring the counterfactual path but consistently remaining lower. Initially, the average difference is approximately $53,800$ CHF, or 13% of the liquid wealth of counterfactual homeowners in the same period — an amount roughly equal to the average down payment ($51,600$ CHF). Over time, this gap widens steadily, reaching $121,300$ CHF (23%) after thirty years. Panel B illustrates the evolution of total net wealth. Differences between the two groups remain small for the first two decades. Around 15 years post-purchase, owners' net wealth is on average $25,100$ CHF (4%) lower than in the counterfactual scenario. However, this reverses after 25 years, and by year 30, owners surpass the counterfactual group, holding on average $13,400$ CHF (2.5%) more in total net wealth.

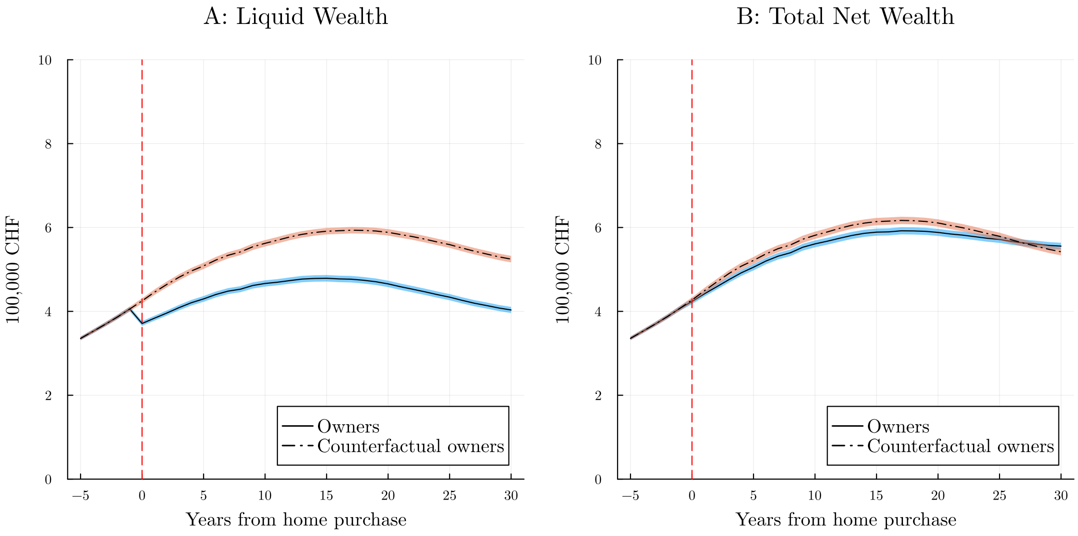

Figure 4. Evolution of wealth

Note: Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%. Colored areas represent 95% confidence bands. Agents acquiring property in the first life period are excluded.

To better account for unit and time fixed effects, I conduct an event study analysis comparing intra-agent wealth differences across the two scenarios. Given the staggered timing of home purchases, I employ the Callaway and Sant'Anna (2021) estimator instead of a traditional two-way fixed effects (TWFE) regression. The Callaway and Sant'Anna (2021) approach performs a difference-in-differences analysis by assigning individuals to purchase-year cohorts and comparing the outcome trajectories of each "treated" cohort to those of individuals who never receive the treatment—that is, life-long tenants. Here, I control for current income, to increase the comparability of individuals. I then aggregate the cohort-specific estimates by years from purchase—i.e., event time—to obtain event study coefficients.

Figure 5 presents the event study coefficients for both dependent variables. The corresponding table of coefficients can be found in the Appendix (Table A2). The results from the empirical model confirm a persistent long-term gap in liquid wealth between the two scenarios, reaching $125,952$ CHF, or 24% of the counterfactual owners' wealth — 30 years after the purchase. For much of the

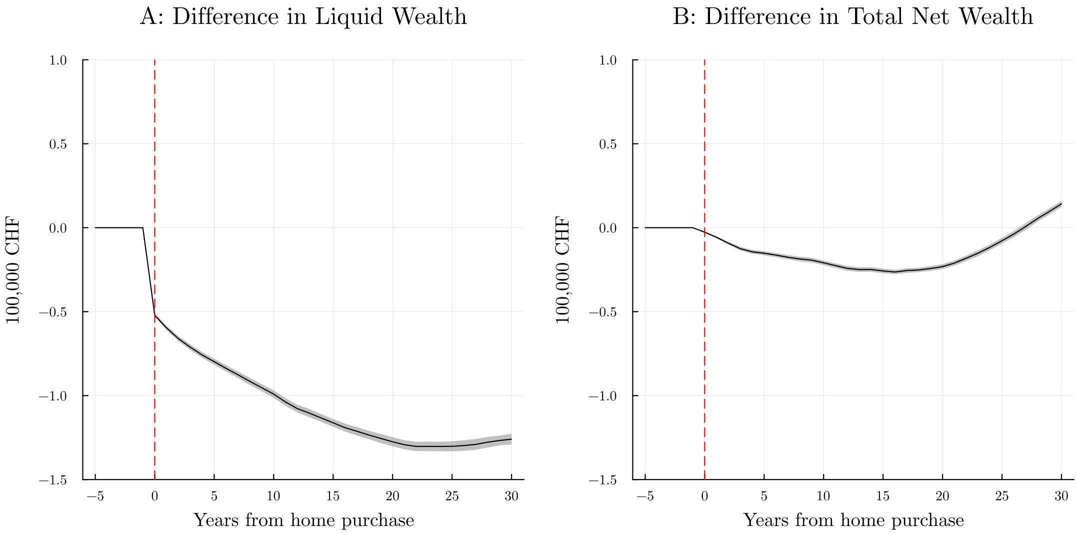

Figure 5. Evolution of differences in wealth, Callaway and Sant'Anna (2021) estimator

Note: Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%. The figures display the event study coefficients with simultaneous 95% confidence bands from the Callaway and Sant'Anna (2021) estimator. Changes are relative to the outcomes at event time -1. The event study coefficients are reported in Appendix Table A2. Agents acquiring property in the first life period are excluded.

time horizon, homeowners in the baseline scenario also hold less total net wealth than in the counterfactual scenario. At event time 15, the estimated difference is $25,764$ CHF (4.2%). It is only after over 25 years that total net wealth in the baseline scenario catches up with—and eventually surpasses—that of the same individuals in the counterfactual scenario. By year 30, baseline homeowners hold $14,173$ CHF (2.6%) more in total net wealth.

The persistently lower total net wealth of owners in the years immediately following the purchase could be attributed to higher overall consumption expenditures. The positive effect of homeownership on other types of consumption has been noted in the literature, for example by Sodini et al. (2023). Figure 6 illustrates this pattern both descriptively (Panel A) and empirically (Panel B). The total consumption variable includes both non-housing consumption and housing costs. Excluding the initial spike related to the down payment, owners' total consumption is $4,716$ CHF (6%) higher one year after the purchase compared to counterfactual owners. This difference gradually declines over time and becomes

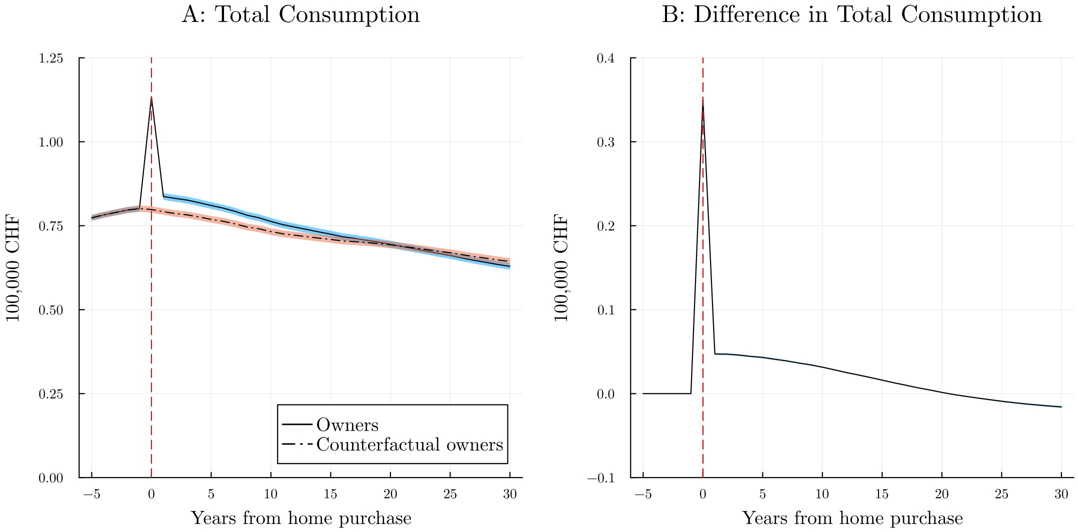

Figure 6. Evolution of total consumption

Note: Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%. Panel A displays per-period averages for each group. Panel B displays the event study coefficients with simultaneous 95% confidence bands from the Callaway and Sant'Anna (2021) estimator. Changes are relative to the outcomes at event time -1. The event study coefficients are reported in Appendix Table A2. Agents acquiring property in the first life period are excluded.

slightly negative by the end of the observation window. [8] Note, that the increase in total consumption is not due to higher housing costs for owners. In fact, I find that owners spend *less* in housing costs that counterfactual owners –Figure A2 in the Appendix documents this. This is primarily due to the down payment requirement: owners must consume less housing space in order to afford the property. As a result, in later years they consume and spend less on housing than in the counterfactual scenario.

Thus, shifting the focus to the dynamics since the home purchase reveals that the positive effects of homeownership on total wealth emerge only several years later. In the initial years, homeownership appears to reduce the propensity to save, leading to higher wealth levels among counterfactual owners. Overall, I find no evidence that homeownership, per se, leads to higher wealth accumulation for most of an individual's life, all else being equal.

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[8] Appendix Section A.A2 presents results from an OLS regression analyzing the effects of income, wealth, and counterfactual status on total consumption at event times 1, 15, and 30. There, I exclude that the decreasing consumption patterns observed among owners are due to lower liquid resources.

V. Portfolio Composition

In the previous section, I showed that homeownership reduces agents' liquid resources, and that the gap relative to the same individuals in the counterfactual scenario is never fully closed—regardless of whether outcomes are measured by age or by time since purchase. I now turn to stock holdings within agents' portfolios.

Panel A of Figure 7 illustrates average changes in stock market participation, capturing both intensive and extensive margins. These results appear to be consistent with previous literature. Following a sharp increase in participation immediately after being excluded from the real estate market, the participation rate among counterfactual homeowners stabilizes at 89% roughly 10 years after the missed purchase. In contrast, the rate among actual homeowners remains steady at 47%. These patterns have two key implications. First, they provide evidence of a crowding-out effect: no agent enters the stock market after purchasing a home. Second, they suggest that individuals may turn to the stock market as a substitute investment channel when excluded from the housing market. Panel B presents the evolution of stock shares in the liquid portfolio, conditional on stock market participation. Homeowners' risky asset share increases by 2.6 percentage points at the time of purchase—a relative rise of 15% compared to the average 17.6% share held by counterfactual homeowners in the same period. In the years that follow, this gap continues to widen, reaching 8.4 percentage points (45%) 30 years after the purchase. In Appendix Figure A3, and in Table Appendix Table A2 I validate this descriptive evidence using the Callaway and Sant'Anna (2021) estimator. The coefficient on the average difference in stock shares between the two scenarios is 2 percentage points in the first year, increasing to 8 percentage points at the end of the 30 years.

The descriptive analysis of the absolute volume of stock holdings reveals that counterfactual owners, as a group, invest larger amounts of liquid wealth in stocks — primarily due to their higher participation rate (Panel C of Figure 7). However, many of the newly participating agents have relatively low levels of liquid wealth and therefore invest smaller amounts than those who were already active in the

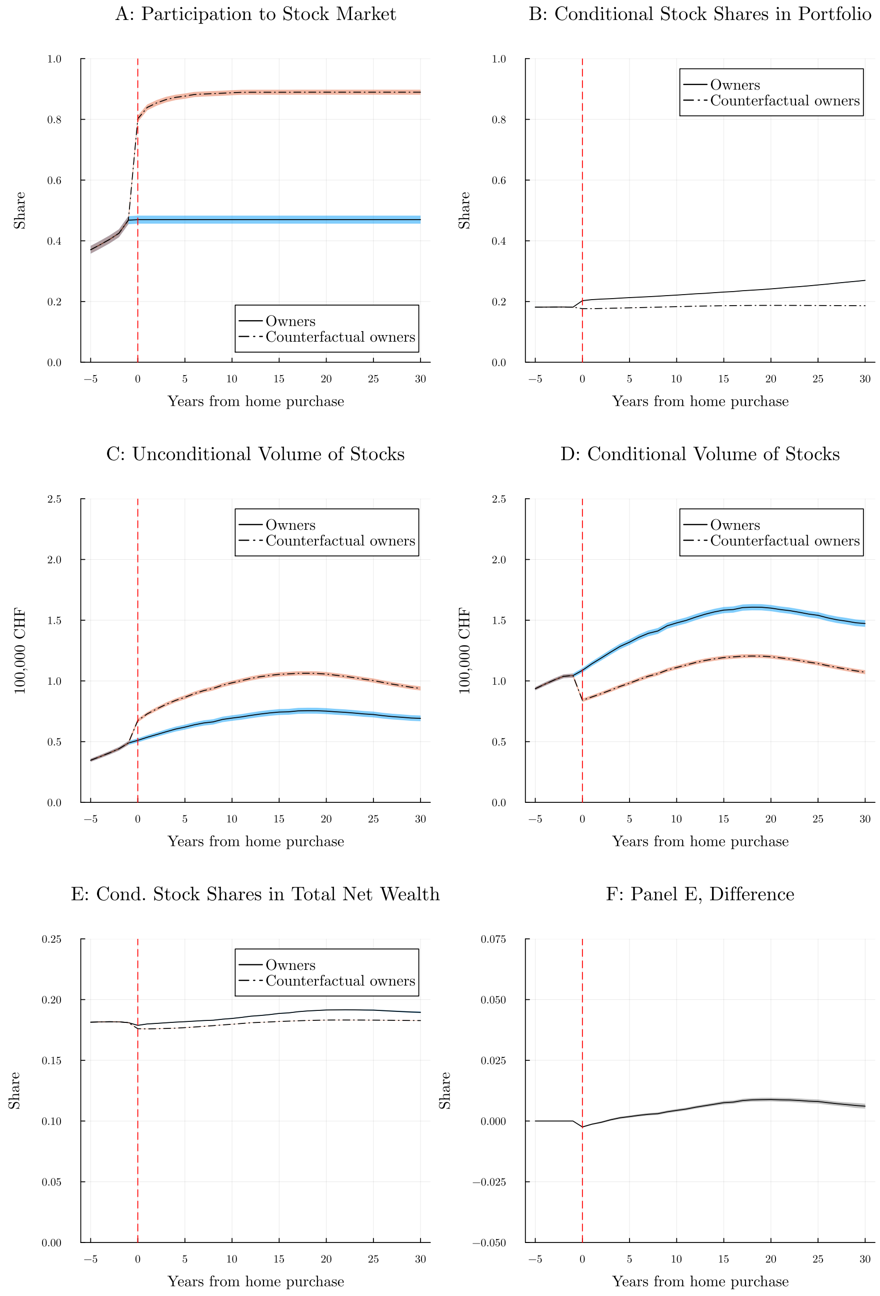

Figure 7. Evolution of participation to the stock market

Note: Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%. Panels A-E display per-period averages for each group. Panel F displays the event study coefficients with simultaneous 95% confidence bands from the Callaway and Sant'Anna (2021) estimator. Changes are relative to the outcomes at event time -1. The event study coefficients are reported in Appendix Table A2. Agents acquiring property in the first life period are excluded.

market. As a result, the volume of stock holdings conditional on participation is lower for counterfactual owners than for true owners, as shown descriptively in Panel D of Figure 7. Among owners, the lower level of liquid assets effectively offsets the higher stock shares observed in Panel B. This suggests that owners are not actively increasing their exposure to riskier assets. Rather, the relative weight of existing stock holdings increases simply because total liquid assets have declined. Accordingly, the average share of stocks in total net wealth remains nearly constant over time (Panel E). Put differently, when deciding how much to invest in stocks, individuals appear to consider their total net wealth—not just their liquid wealth or its composition. The higher participation rate among counterfactual owners, in turn, leads to a slight decline in their average stock share. Panel F displays the event study coefficients from the Callaway and Sant'Anna (2021) estimator, applied to the intra-agent difference in conditional stock shares in total net wealth. The overall post-purchase effect predicts a statistically significant, yet modest increase of 0.5 percentage points. The largest estimated effect—an increase of 0.9 percentage points—appears 20 years later. These findings suggest that while homeowners may appear to increase the risky share of their liquid portfolios, this shift is likely mechanical. The down payment reduces liquid savings, and since portfolio allocation decisions are made based on total net wealth rather than liquid wealth alone, the absolute volume of stock holdings remains largely unchanged.

To facilitate a clearer comparison, I further examine the stock holdings of owners and counterfactual owners who already held stocks prior to the home purchase. Figure 8 suggests that there are no differences in the average stock volumes between the two scenarios. Since total net wealth is also similar across groups, the absolute value of stock holdings remains nearly identical. Estimates from the Callaway and Sant'Anna (2021) specification show that during the first 10 years of homeownership, counterfactual owners hold at most $4,400$ CHF more in stocks (at event time 3, corresponding to 3.4% of counterfactual owners' stock holdings). In later years, the trend reverses, with homeowners eventually holding almost $3,000$

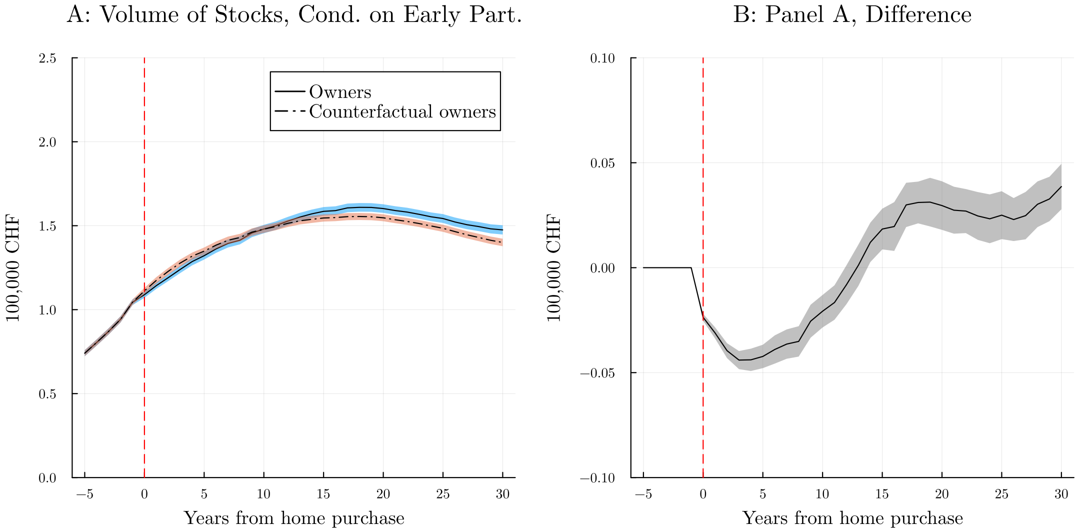

FIGURE 8. EVOLUTION OF STOCK VOLUMES IN OWNERS' PORTFOLIOS, CONDITIONAL ON PARTICIPATION BEFORE THE HOME PURCHASE

Note: Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%. Panels A displays per-period averages for each group. Colored areas represent 95% confidence bands. Panel B displays the event study coefficients with simultaneous 95% confidence bands from the Callaway and Sant'Anna (2021) estimator. Changes are relative to the outcomes at event time -1. The event study coefficients are reported in Appendix Table A2. Agents acquiring property in the first life period are excluded.

CHF more in stocks (2% at event time 20). This contrasts with the development of the difference in liquid wealth observed in Figure 5, in which the gap in liquidity keeps increasing over time. Stock holdings in the owners' portfolio do surpass those of counterfactual owners, albeit slightly and only some years later. While this effect can be attributed to the diversification mechanism described by Yao and Zhang (2005), the additional returns generated by the higher stock holdings hardly benefit long-term wealth. A Callaway and Sant'Anna (2021) specification on the difference in cumulative returns indicates an insignificant overall (i.e. over 30 years) effect (see Figure A4 and Table A2 in the Appendix).

Hence, the analysis in this section suggests that assuming a positive effect of increased risky shares in the wealth growth of homeowners is misleading. Homeowners do not hold more stocks after the purchase—at least not in absolute terms. Therefore, I can rule out the possibility that higher returns from risky assets contribute to the observed wealth gap between homeowners and tenants.

VI. Conclusion

In this paper, I investigate whether homeownership supports (liquid) wealth accumulation through higher stock holdings. My simulation, based on a simplified Swiss setting, confirms the prediction that the risky share of liquid portfolios increases at the intensive margin following a home purchase. However, this change appears mostly mechanical, driven by the reduced liquid resources available after the down payment. The total volume of stocks remains largely unchanged. The estimated immediate positive effect of homeownership on conditional stock shares—an increase of 2 percentage points—is close to the 2.7 percentage point increase observed in Sweden, as documented in the recent empirical study by Sodini et al. (2023). However, in contrast to both Sweden and Switzerland, Cho (2014) reports a negative effect of homeownership on stock shares. Specifically, for Switzerland, the author finds an 11 percentage point lower stock share among homeowners compared to tenants. Although this result is based on a limited sample and a single survey wave of the older population, its divergence from my findings highlights the need for further empirical evaluation of the model's predictions. Nonetheless, both this study and mine cast doubt on the significance of additional stock market returns in the wealth accumulation process of homeowners.

The results of my simulation also complement the findings of Paz-Pardo (2024). In his study, the author shows that younger generations face increasing barriers to homeownership due to lower wages and higher earnings risk. My analysis suggests that owning a property is not essential for the accumulation of long-term wealth. Instead, income levels and long-term saving behavior appear to be the primary drivers of wealth inequality. Nonetheless, relatively poorer individuals benefit more from homeownership than their wealthier counterparts, as the latter can more easily compensate for exclusion from the real estate market. Furthermore, Paz-Pardo (2024) argues that younger generations are unable to fully offset the lack of real estate ownership through financial investments. My model shows that, when restricted from purchasing property, households increase their stock market participation. However, since this compensating behavior concerns primarily poorer agents, the average volume of risky assets held remains lower than that of stock-holding homeowners. One limitation of my model is its omission of initial (inherited) wealth. As a result, I am unable to assess the role of inheritance in shaping long-term patterns of both liquid and total wealth. Future research should address this shortcoming and explore the interplay between inherited wealth, homeownership, and wealth accumulation.

Finally, my study offers insights into the ongoing debate surrounding the abolition of the imputed rental value tax in Switzerland. Under the proposed reform, homeowners would also lose the ability to deduct mortgage interest payments from taxable income—an aspect that remains highly contested. While the abolition of the rental value tax would benefit homeowners with small or fully amortized mortgages, it may increase housing costs for recent buyers. Smaller mortgages are typically held by older or wealthier individuals, who, according to my results, gain the least from further increases in real estate wealth. Additionally, the current system favors the existence of the two types of mortgages, one of which is not subject to amortization requirements. If lenders anticipate that homeowners will aim for full amortization over time, they may tighten lending standards or raise the cost of these mortgages. Such changes would effectively increase the barriers to homeownership, particularly for financially constrained households. Future research should investigate the long-term wealth implications of changes to real estate taxation regimes.

REFERENCES

Attanasio, Orazio, Agnes Kovacs, Patrick Moran, and National Bureau of Economic Research. 2020. *Temptation and commitment: Understanding hand-to-mouth behavior.* National Bureau of Economic Research.

Blanchet, Thomas, and Clara Martínez-Toledano. 2023. "Wealth inequality dynamics in Europe and the United States: Understanding the determinants." *Journal of Monetary Economics*, 133: 25–43.

Blundell, Richard, Rowena Crawford, Eric French, and Gemma Tetlow. 2016. "Comparing retirement wealth trajectories on both sides of the pond." *Fiscal Studies*, 37(1): 105–130.

Bommier, Antoine, Daniel Harenberg, François Le Grand, and Cormac O'Dea. 2020. "Recursive preferences, the value of life, and household finance."

Bourassa, Steven C, and Martin Hoesli. 2010. "Why do the Swiss rent?" *The Journal of Real Estate Finance and Economics*, 40: 286–309.

Bütler, Monika, and Sabrina Stadelmann. 2020. "Building on a pension: Second pillar wealth as a way to finance real estate?" *The Journal of the Economics of Ageing*, 17: 100261.

Callaway, Brantly, and Pedro H. C. Sant'Anna. 2021. "Difference-in-Differences with multiple time periods." *Journal of Econometrics*, 225(2): 200–230.

Carroll, Christopher D. 2006. "The method of endogenous gridpoints for solving dynamic stochastic optimization problems." *Economics letters*, 91(3): 312–320.

Chetty, Raj, László Sándor, and Adam Szeidl. 2017. "The effect of housing on portfolio choice." *The Journal of Finance*, 72(3): 1171–1212.

Cho, Insook. 2014. "Homeownership and investment in risky assets in Europe." *Rev. Eur. Stud.*, 6: 254.

Christelis, Dimitris, Dimitris Georgarakos, and Michael Haliassos. 2013. “Differences in portfolios across countries: Economic environment versus household characteristics.” *Review of Economics and Statistics*, 95(1): 220–236.

Christelis, Dimitris, Tullio Jappelli, and Mario Padula. 2010. “Cognitive abilities and portfolio choice.” *European Economic Review*, 54(1): 18–38.

Cocco, Joao F. 2005. “Portfolio choice in the presence of housing.” *The Review of Financial Studies*, 18(2): 535–567.

Cocco, Joao F, Francisco J Gomes, and Pascal J Maenhout. 2005. “Consumption and portfolio choice over the life cycle.” *The Review of Financial Studies*, 18(2): 491–533.

Crawford, Rowena, and Andrew Hood. 2016. “Lifetime receipt of inheritances and the distribution of wealth in England.” *Fiscal Studies*, 37(1): 55–75.

De Francisco, Eva. 2023. “Housing choices and their implications for consumption heterogeneity.” *Macroeconomic Dynamics*, 27(1): 56–71.

De Nardi, Mariacristina, Eric French, and John B Jones. 2010. “Why do the elderly save? The role of medical expenses.” *Journal of political economy*, 118(1): 39–75.

Di, Zhu Xiao, Eric Belsky, and Xiaodong Liu. 2007. “Do homeowners achieve more household wealth in the long run?” *Journal of Housing Economics*, 16(3-4): 274–290.

Elinder, Mikael, Oscar Erixson, and Daniel Waldenström. 2018. “Inheritance and wealth inequality: Evidence from population registers.” *Journal of Public Economics*, 165: 17–30.

Fagereng, Andreas, Charles Gottlieb, and Luigi Guiso. 2017. “Asset market participation and portfolio choice over the life-cycle.” *The Journal of Finance*, 72(2): 705–750.

Federal Statistical Office. 2021. “Detaillierte Haushaltsausgaben (sämtliche Tabellen der Jahre 2015-2019).” Federal Statistical Office. Last accesed: September 15 2022.

Federal Statistical Office. 2022. “Monatlicher Bruttolohn (Zentralwert und Quartilbereich) nach Lebensalter, beruflicher Stellung und Geschlecht - Privater und öffentlicher Sektor zusammen.” Federal Statistical Office. Last accesed: September 15 2022.

Federal Statistical Office. 2023. “Periodensterbetafeln für die Schweiz (1876-2150) nach Jahr, Geschlecht und Alter.” Federal Statistical Office. Last accesed: January 24 2023.

Federal Statistical Office. 2025. “Rented dwellings.” Federal Statistical Office. Last accesed: April 11 2025.

Felici, Marco, and Franz Fuerst. 2023. “The heterogeneous relationship of owner-occupied and investment property with household portfolio choice.” *Journal of Housing Economics*, 62: 101964.

Fuller, Gregory W, Alison Johnston, and Aidan Regan. 2020. “Housing prices and wealth inequality in Western Europe.” *West European Politics*, 43(2): 297–320.

Garbinti, Bertrand, Jonathan Goupille-Lebret, and Thomas Piketty. 2021. “Accounting for wealth-inequality dynamics: methods, estimates, and simulations for France.” *Journal of the European Economic Association*, 19(1): 620–663.

Historical Statistic of Switzerland. 2012. “Durchschnittliche Stundenverdienste von Arbeitern und Arbeiterinnen 1831-1995: absolute Zahlen und Indizes.” Historical Statistic of Switzerland. Last accesed: September 15 2022.

ImmoScout24 - IAZI AG. 2024. “Preisindex für Einfamilienhäuser in der Schweiz von Juni 2022 bis Juni 2024 (in CHF/m^2).” ImmoScout24 - IAZI AG. Last accessed: Mai 23 2025.

Jansen, Kristy AE, and Bas JM Werker. 2022. "The shadow costs of illiquidity." *Journal of Financial and Quantitative Analysis*, 57(7): 2693–2723.

Kaas, Leo, Georgi Kocharkov, and Edgar Preugschat. 2019. "Wealth inequality and homeownership in Europe." *Annals of Economics and Statistics*, , (136): 27–54.

Kaplan, Greg, Giovanni L Violante, and Justin Weidner. 2014. "The wealthy hand-to-mouth." National Bureau of Economic Research.

Palomino, Juan C, Gustavo A Marrero, Brian Nolan, and Juan G Rodríguez. 2022. "Wealth inequality, intergenerational transfers, and family background." *Oxford Economic Papers*, 74(3): 643–670.

Paz-Pardo, Gonzalo. 2024. "Homeownership and portfolio choice over the generations." *American Economic Journal: Macroeconomics*, 16(1): 207–237.

SHP Group. 2024. "Living in Switzerland Waves 1-24 (including a long file) + Covid 19 data (Version 7.0.0)." *FORS data service*, Accessed via FORS data service.

Sodini, Paolo, Stijn Van Nieuwerburgh, Roine Vestman, and Ulf von Lilienfeld-Toal. 2023. "Identifying the benefits from homeownership: A Swedish experiment." *American Economic Review*, 113(12): 3173–3212.

Swiss National Bank. 2022*a*. "Official interest rates." Swiss National Bank. Last accesed: September 15 2022.

Swiss National Bank. 2022*b*. "Real estate price indices – total for Switzerland – by year." Swiss National Bank. Last accessed: September 05 2022.

Tillmann, Robin, Marieke Voorpostel, Erika Antal, Nora Dasoki, Hannah Klaas, Ursina Kuhn, Florence Lebert, Gian-Andrea Monsch, and Valérie-Anne Ryser. 2022. "The Swiss Household Panel (SHP)." *Jahrbücher für Nationalökonomie und Statistik*, 242(3): 403–420.

Turner, Tracy M, and Heather Luea. 2009. "Homeownership, wealth accumulation and income status." *Journal of Housing Economics*, 18(2): 104–114.

Vestman, Roine. 2019. "Limited stock market participation among renters and homeowners." *The Review of Financial Studies*, 32(4): 1494–1535.

Wainer, Allison, and Jeffrey Zabel. 2020. "Homeownership and wealth accumulation for low-income households." *Journal of Housing Economics*, 47: 101624.

Wüest Partner. 2023. "Immobilienmarkt Schweiz 2023-3." Wüest Partner.

Yao, Jiaxiong, Andreas Fagereng, and Gisle Natvik. 2015. "Housing, debt and the marginal propensity to consume." *Norges Bank Research Paper*, 1–38.

Yao, Rui, and Harold H. Zhang. 2005. "Optimal Consumption and Portfolio Choices with Risky Housing and Borrowing Constraints." *Review of Financial Studies*, 18(1): 197–239.

APPENDIX

A1. First-Order Conditions

INTRA-TEMPORAL FOC OF TENANTS

The first order conditions of the value function for retired tenants with respect to current non-housing consumption write as

$$
\begin{aligned}
\frac{\partial V_t^R(X_t)}{\partial C_t} &= \mathbb{E}_t\left[U_C + \pi_t\beta\frac{\partial V_{t+1}}{\partial C_t} + (1-\pi_t)\beta\theta\frac{\partial W_{t+1}}{\partial C_t}\right] \\
&= \mathbb{E}_t\left[U_C + \pi_t\beta\frac{\partial V_{t+1}}{\partial X_{t+1}}\frac{\partial X_{t+1}}{\partial C_t} + (1-\pi_t)\beta\theta\frac{\partial W_{t+1}}{\partial S_t}\frac{\partial S_t}{\partial C_t}\right] \\
&= \mathbb{E}_t\left[U_C + \pi_t\beta\frac{\partial V_{t+1}}{\partial X_{t+1}} + (1-\pi_t)\beta\theta\frac{\partial W_{t+1}}{\partial S_t}\right],
\end{aligned}
\tag{A1}
$$

where U_C represents the partial derivative of current utility with respect to non-housing consumption. For current housing consumption, by combining equation 4 (on housing costs) with the first-order conditions, one obtains

$$
\begin{aligned}
\frac{\partial V_t^R(X_t)}{\partial h_t} &= \mathbb{E}_t\left[U_h + \pi_t\beta\frac{\partial V_{t+1}}{\partial h_t} + (1-\pi_t)\beta\theta\frac{\partial W_{t+1}}{\partial h_t}\right] \\
&= \mathbb{E}_t\left[U_h + \pi_t\beta\frac{\partial V_{t+1}}{\partial X_{t+1}}\frac{\partial X_{t+1}}{\partial h_t} + (1-\pi_t)\beta\theta\frac{\partial W_{t+1}}{\partial S_t}\frac{\partial S_t}{\partial h_t}\right] \\
&= \mathbb{E}_t\left[U_h + \pi_t\beta\frac{\partial V_{t+1}}{\partial X_{t+1}}\frac{\partial X_{t+1}}{\partial C_t}\psi_r P_t + (1-\pi_t)\beta\theta\frac{\partial W_{t+1}}{\partial S_t}\frac{\partial S_t}{\partial C_t}\psi_r P_t\right] \\
&= \mathbb{E}_t\left[U_h + \pi_t\beta\frac{\partial V_{t+1}}{\partial X_{t+1}}\psi_r P_t + (1-\pi_t)\beta\theta\frac{\partial W_{t+1}}{\partial S_t}\psi_r P_t\right].
\end{aligned}
\tag{A2}
$$

Let λ be a positive Lagrangian parameter. Thus, the first-order conditions of the Lagrangian equations read as

$$\begin{aligned}\frac{\partial \mathcal{L}}{\partial C_t} &= \mathbb{E}_t\left[U_C + \pi_t\beta\frac{\partial V_{t+1}}{\partial X_{t+1}} + (1-\pi_t)\beta\theta\frac{\partial W_{t+1}}{\partial S_t}\right] - \lambda = 0,\\ \frac{\partial \mathcal{L}}{\partial h_t} &= \mathbb{E}_t\left[U_h + \pi_t\beta\frac{\partial V_{t+1}}{\partial X_{t+1}}\psi_r P_t + (1-\pi_t)\beta\theta\frac{\partial W_{t+1}}{\partial S_t}\psi_r P_t\right] - \lambda\psi_r P_t = 0.\end{aligned} \tag{A3}$$

Combining the two equations gives the following Euler Equation

$$\frac{U_h}{U_c} = \psi_r P_t. \tag{A4}$$

The first derivative of the current utility with respect to non-housing consumption reads as

$$U_C = (1-\eta)(C_t^{1-\eta}h_t^{\eta})^{-\eta}C_t^{-\eta}h_t^{\eta} \tag{A5}$$

and to housing consumption as

$$U_h = \eta(C_t^{1-\eta}h_t^{\eta})^{-\eta}C_t^{1-\eta}h_t^{\eta-1}. \tag{A6}$$

Combining these two derivatives into the Euler Equation A4 and rewriting in terms of housing consumption gives the equality

$$h_t = C_t\frac{\eta}{1-\eta}\frac{1}{\psi_r P_t}. \tag{A7}$$

Thus, housing consumption can be explained in terms of current non-housing consumption, given the current housing prices P_t. It follows that one can rewrite the value function only in terms of non-housing consumption, i.e.

$$V_t^R(X_t) = \mathbb{E}_t\left[\frac{(C_t q_t)^{1-\gamma}}{1-\gamma} + \pi_t\beta V_{t+1}(X_{t+1}) + (1-\pi_t)\beta\theta\frac{(W_{t+1}+k)^{1-\gamma}}{1-\gamma}\right], \tag{A8}$$

with

$$q_t = \left(\frac{\eta}{1-\eta}\frac{1}{\psi_r P_t}\right)^{\eta}. \tag{A9}$$

INTER-TEMPORAL FOC OF TENANTS

The first-order conditions of A8 with respect to current non-housing consumption read as

(A10)

$$\begin{aligned}\frac{\partial V_t^R(X_t)}{\partial C_t} =& \mathbb{E}_t\left[q_t(C_tq_t)^{-\gamma} + \pi_t\beta\frac{\partial V_{t+1}}{\partial C_{t+1}}\frac{\partial C^*_{t+1}}{\partial C_t} + (1-\pi_t)\beta\theta\frac{\partial W_{t+1}}{\partial C_t}\right]\\ =& \mathbb{E}_t\left[q_t(C_tq_t)^{-\gamma} + \pi_t\beta q_{t+1}(C^*_{t+1}q_{t+1})^{\gamma}\frac{\partial C^*_{t+1}}{\partial C_t} + (1-\pi_t)\beta\theta\frac{\partial W_{t+1}}{\partial C_t}\right]\\ =& \mathbb{E}_t[q_t(C_tq_t)^{-\gamma} - \pi_t\beta q_{t+1}(C^*_{t+1}q_{t+1})^{-\gamma}(R_f+\alpha_t(R_{t+1}-R_f))\\ &-(1-\pi_t)\beta\theta(R_f+\alpha_t(R_{t+1}-R_f))(W_{t+1}+k)^{-\gamma}] = 0,\end{aligned}$$

where C^*_{t+1} is a fixed level of future non-housing consumption, interpolated given the expected resources of the next period. Then, the inverse Euler equation is derived by rewriting A10 in terms of C_t, i.e.

$$\begin{aligned}q_t(C_tq_t)^{-\gamma} =& \mathbb{E}_t[\pi_t\beta q_{t+1}(C^*_{t+1}q_{t+1})^{-\gamma}(R_f+\alpha_t(R_{t+1}-R_f))\\ &+(1-\pi_t)\beta\theta(R_f+\alpha_t(R_{t+1}-R_f))(W_{t+1}+k)^{-\gamma}]\\ \Rightarrow C_t =& (q_t^{\gamma-1}RHS)^{-1/\gamma}.\end{aligned} \tag{A11}$$

Inter-Temporal FOC of Owners

The problem is analogous to that of tenants. However, there is no intra-temporal optimization, since housing consumption is fixed. Hence,

(A12)

$$\begin{aligned}\frac{\partial V_t^O(X_t)}{\partial C_t} =& \mathbb{E}[C_t^{-\gamma} - \pi_t \beta (1-\eta) C_{t+1}^{*((1-\eta)(1-\gamma)-1)} \overline{h}^{\eta(1-\gamma)} (R_f + \alpha_t (R_{t+1} - R_f)) \\ & - (1-\pi_t)\beta\theta(R_f + \alpha_t(R_{t+1} - R_f))(W_{t+1} + k)^{-\gamma}] = 0.\end{aligned}$$

Asset Allocation

For tenants, taking the partial derivative of A8 with respect to α_t gives

(A13)

$$\begin{aligned}\frac{\partial V_t^R(X_t)}{\partial \alpha_t} =& \mathbb{E}_t \left[\pi_t \beta \frac{\partial V_{t+1}}{\partial \alpha_t} + (1-\pi_t)\beta\theta \frac{\partial W_{t+1}}{\partial \alpha_t} \right] \\ =& \left[\pi_t \beta \frac{\partial V_{t+1}}{\partial S_{t+1}} \frac{\partial S_{t+1}}{\partial \alpha_t} + (1-\pi_t)\beta\theta \frac{\partial W_{t+1}}{\partial \alpha_t} \right] \\ =& \Bigg[\pi_t \beta (Y_{t+1} + S_t R_f + \alpha_t S_t (R_{t+1} - R_f) - I_t^{Part})^{-\gamma} \left(\frac{q_t}{1-\eta} \right)^{1-\gamma} (S_t(R_{t+1} - R_f) - I_t^{Part}) \\ & +(1-\pi_t)\beta\theta(W_{t+1} + k)^{-\gamma}(S_t(R_{t+1} - R_f) - I_t^{Part}) \Big] = 0.\end{aligned}$$

Analogously, for owners the first-order conditions read as

(A14)

$$\begin{aligned}\frac{\partial V_t^O(X_t)}{\partial \alpha_t} =& \Big[\pi_t \beta \left(C_{t+1}^{*(1-\eta)(1-\gamma)-1} \overline{h}^{\eta(1-\gamma)} (1-\eta) \right)^{1-\gamma} (S_t(R_{t+1} - R_f) - I_t^{Part}) \\ & +(1-\pi_t)\beta\theta(W_{t+1} + k)^{-\gamma}(S_t(R_{t+1} - R_f) - I_t^{Part}) \Big] = 0.\end{aligned}$$

with

$$C_{t+1}^{*} = Y_{t+1} + S_t R_f + \alpha_t S_t (R_{t+1} - R_f) - \psi_o (1 - \omega_{t+1}) P_{t+1} \overline{h} - I_t^{Part} \tag{A15}$$

A2. Effects of Income and Wealth on Total Consumption

The results on the evolution of consumption in Section IV.B show that owners increase their total expenditures after purchasing a home. However, the Callaway and Sant'Anna (2021) estimator does not clearly account for levels of income and available liquid wealth. Thus, the observed reduction in the difference in total consumption between the two scenarios over time may be due to declining available resources rather than the effect of ownership per se. To determine whether it is homeownership or liquid resources that drive the observed patterns, I run an OLS regression on total consumption at different event times. The regression model follows the specification below:

$$\text{(A16)}\quad \begin{aligned} \ln(C_{i,e}+H_{i,e}) = {} & Const + \beta_1 \ln Y_{i,e} + \ln\left(L_e + \omega_e P_e \overline{h} \cdot (1 - Counterfactual)\right) \\ & + Counterfactual_i + t_e + u_{i,e}. \end{aligned}$$

Specifically, total consumption expenditures, $C_{i,e} + H_{i,e}$, at event time e, are regressed on income, $Y_{i,e}$, and total net wealth at the beginning of the period—i.e., the sum of liquid resources and net housing wealth, expressed as

$$\text{(A17)}\qquad \ln\left(L_e + \omega_e P_e \overline{h} \cdot (1 - Counterfactual)\right).$$

Alongside the binary variable for the counterfactual scenario, $Counterfactual_i$, this term captures the effect of total wealth independently of its composition. I also include year fixed effects, as the event times correspond to different years across the population. Note that I use the logarithmic form of continuous variables to enable a percentage interpretation of the coefficients.

The results are shown in Table A1. The sign of the coefficient on the counterfactual dummy confirms that homeownership initially has a positive effect on total consumption. Only at the final event time considered, $e = 30$, does the effect turn negative, suggesting that owners consume 7.6% less than counterfactual owners. At event times 1 and 15, the coefficient magnitudes are similar to those in the event study: homeownership increases total consumption by 5.6% one year after the purchase and by 2.9% fifteen years after the purchase. In the Callaway and Sant'Anna (2021) model, I find an increase of $4,720$ CHF at event time 1, corresponding to 6% of counterfactual owners' total consumption. At event time 15, the event study predicts an increase of $1,161$ CHF, or 2.3%.

Overall, the results from this additional analysis suggest that the decreasing difference in total consumption between the two scenarios for homeowners is not due to reduced liquid resources.

Table A1— Determinants of total consumption

	(1) $\ln(C_1 + H_1)$	(2) $\ln(C_{15} + H_{15})$	(3) $\ln(C_{30} + H_{30})$
$\ln Y_e$	0.540***	0.349***	0.246***
	(0.004)	(0.006)	(0.006)
$\ln(L_e + \omega_t P_t \overline{h}(1 - Counterfactual))$	0.266***	0.586***	0.741***
	(0.004)	(0.006)	(0.008)
Counterfactual	-0.0548***	-0.0285***	0.0738***
	(0.002)	(0.002)	(0.001)
t_e	-0.00613***	-0.000832*	0.00119***
	(0.000)	(0.000)	(0.000)
Const.	-0.352***	-1.206***	-1.697***
	(0.006)	(0.020)	(0.026)
R-sq	0.944	0.970	0.991
N	11088	11088	11088

Note: Robust standard errors in parentheses. Monetary values are in terms of 2020 Swiss Francs. Values are winsorized at the bottom and top 5%.

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

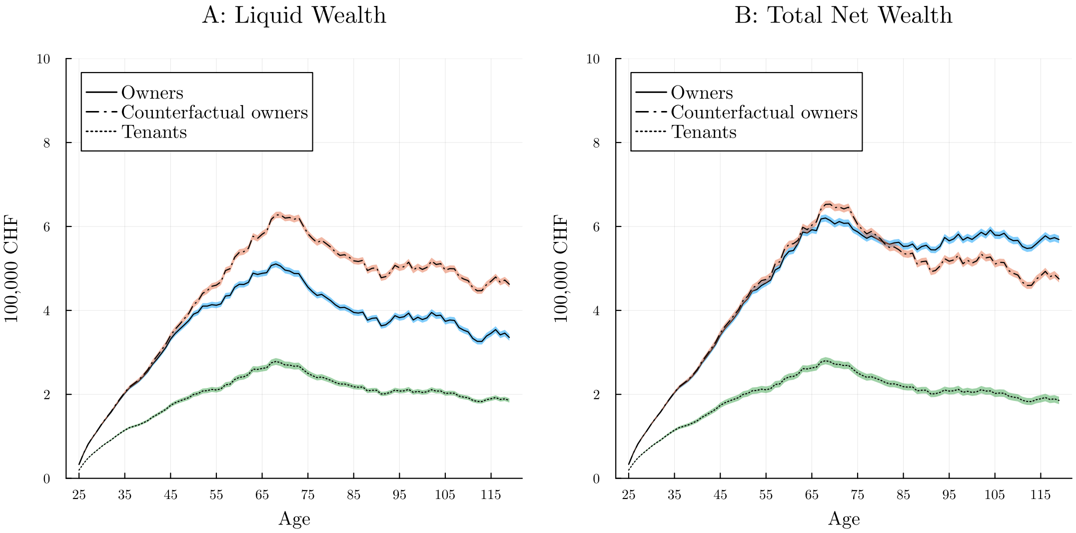

Figure A1. Life-cycle wealth

Note: Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%. Colored areas represent 95% confidence bands.

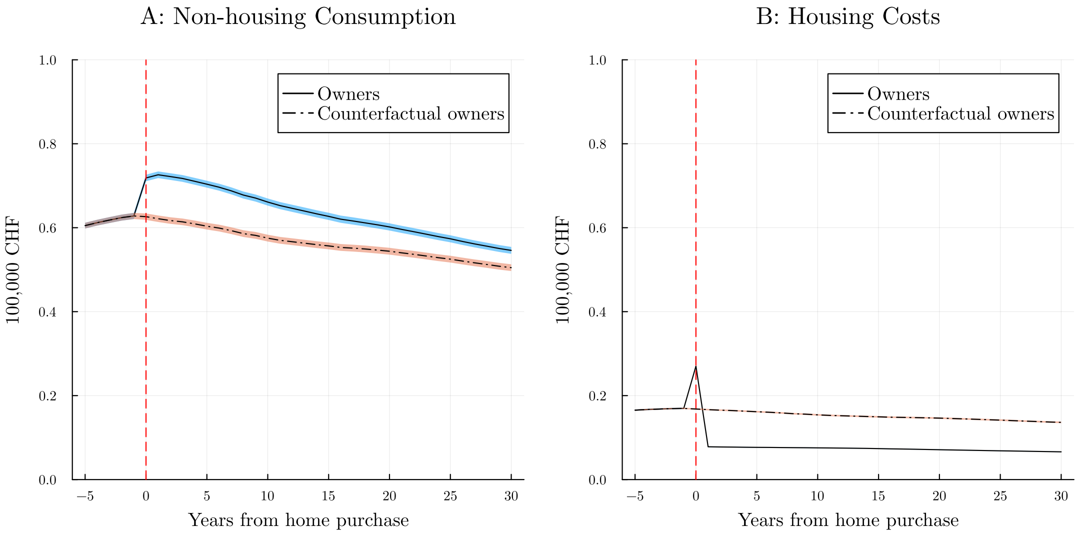

Figure A2. Consumption expenditures

Note: Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%. Panels A displays per-period averages for each group. Colored areas represent 95% confidence bands. Panel B displays the event study coefficients with simultaneous 95% confidence bands from the Callaway and Sant'Anna (2021) estimator. Changes are relative to the outcomes at event time -1. The event study coefficients are reported in Appendix Table A2. Agents acquiring property in the first life period are excluded.

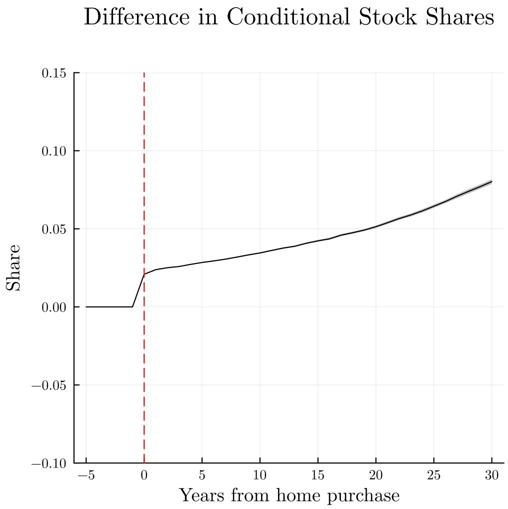

Figure A3. Evolution of differences in conditional stock shares

Note: The figure displays the event study coefficients with simultaneous 95% confidence bands from the Callaway and Sant'Anna (2021) estimator. Changes are relative to the outcomes at event time -1. The event study coefficients are reported in Appendix Table A2. Agents acquiring property in the first life period are excluded.

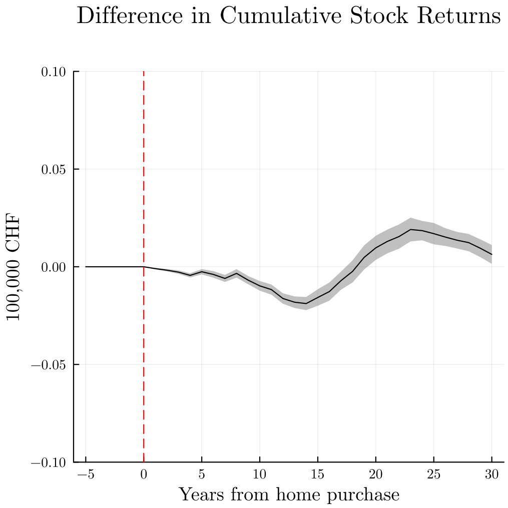

Figure A4. Evolution of differences in cumulative stock returns, codnitional on participating before the home purchase

Note: Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%. The figure displays the event study coefficients with simultaneous 95% confidence bands from the Callaway and Sant'Anna (2021) estimator. Changes are relative to the outcomes at event time -1. The event study coefficients are reported in Appendix Table A2. Agents acquiring property in the first life period are excluded.

Table A2— Event Study Coefficients

Event time	(1)	(2)	(3)	(4)	(5)	(6)	(7)
0	-0.5208***	-0.0267***	0.3502***	0.0209***	-0.0024***	-0.0237***	0
	(0.0035)	(0.001)	(0.0019)	(1e-04)	(1e-04)	(6e-04)	(NA)
1	-0.5974***	-0.0572***	0.0472***	0.0238***	-0.0013***	-0.0311***	-0.001***
	(0.0046)	(0.002)	(5e-04)	(1e-04)	(1e-04)	(0.001)	(1e-04)
2	-0.6612***	-0.0924***	0.047***	0.0251***	-5e-04***	-0.0395***	-0.0018***
	(0.0055)	(0.0028)	(5e-04)	(1e-04)	(1e-04)	(0.0013)	(2e-04)
3	-0.7122***	-0.1249***	0.0459***	0.0258***	5e-04***	-0.044***	-0.0028***
	(0.0061)	(0.0037)	(5e-04)	(1e-04)	(2e-04)	(0.0016)	(3e-04)
4	-0.7584***	-0.1436***	0.0443***	0.0272***	0.0013***	-0.0439***	-0.0044***
	(0.0065)	(0.004)	(4e-04)	(1e-04)	(2e-04)	(0.0019)	(4e-04)
5	-0.798***	-0.152***	0.0431***	0.0284***	0.0018***	-0.0423***	-0.0025***
	(0.0068)	(0.0042)	(5e-04)	(1e-04)	(2e-04)	(0.002)	(5e-04)
6	-0.8378***	-0.1632***	0.041***	0.0294***	0.0024***	-0.039***	-0.0039***
	(0.0071)	(0.0041)	(4e-04)	(1e-04)	(2e-04)	(0.0024)	(6e-04)
7	-0.876***	-0.176***	0.039***	0.0305***	0.0028***	-0.0364***	-0.006***
	(0.0073)	(0.0044)	(4e-04)	(1e-04)	(2e-04)	(0.0025)	(6e-04)
8	-0.9151***	-0.1863***	0.0365***	0.0319***	0.003***	-0.0351***	-0.0034***
	(0.0081)	(0.0048)	(4e-04)	(1e-04)	(2e-04)	(0.0026)	(7e-04)
9	-0.9531***	-0.1932***	0.0343***	0.0333***	0.0038***	-0.0255***	-0.0068***
	(0.008)	(0.0048)	(4e-04)	(1e-04)	(2e-04)	(0.0029)	(7e-04)
10	-0.9909***	-0.2089***	0.0315***	0.0345***	0.0044***	-0.0207***	-0.0098***
	(0.0083)	(0.0047)	(3e-04)	(2e-04)	(2e-04)	(0.0028)	(8e-04)
11	-1.04***	-0.2258***	0.0283***	0.0361***	0.0049***	-0.0166***	-0.0117***
	(0.0086)	(0.0047)	(3e-04)	(2e-04)	(2e-04)	(0.003)	(9e-04)
12	-1.08***	-0.2422***	0.0251***	0.0377***	0.0057***	-0.0081	-0.0163***
	(0.0085)	(0.0047)	(3e-04)	(2e-04)	(2e-04)	(0.0034)	(9e-04)
13	-1.1***	-0.2492***	0.0223***	0.0388***	0.0063***	0.0012	-0.0181***
	(0.0091)	(0.0049)	(4e-04)	(2e-04)	(2e-04)	(0.0036)	(0.001)
14	-1.13***	-0.2488***	0.0192***	0.0408***	0.0069***	0.0121***	-0.0188***
	(0.0086)	(0.0048)	(3e-04)	(2e-04)	(2e-04)	(0.0034)	(0.0011)
15	-1.16***	-0.2576***	0.0161***	0.0423***	0.0076***	0.0184***	-0.0157***
	(0.0087)	(0.0048)	(3e-04)	(2e-04)	(3e-04)	(0.0035)	(0.0014)
16	-1.19***	-0.2637***	0.0128***	0.0436***	0.0078***	0.0196***	-0.0127***
	(0.009)	(0.0045)	(3e-04)	(2e-04)	(3e-04)	(0.0042)	(0.0016)
17	-1.21***	-0.255***	0.0099***	0.0459***	0.0084***	0.0299***	-0.0071***
	(0.0093)	(0.0048)	(3e-04)	(3e-04)	(3e-04)	(0.0038)	(0.0016)
18	-1.23***	-0.2516***	0.0069***	0.0475***	0.0087***	0.0311***	-0.0024
	(0.0093)	(0.0045)	(3e-04)	(3e-04)	(3e-04)	(0.0036)	(0.0019)
19	-1.26***	-0.2427***	0.0043***	0.0492***	0.0088***	0.0312***	0.0048
	(0.0103)	(0.0048)	(3e-04)	(3e-04)	(3e-04)	(0.0042)	(0.0021)
20	-1.27***	-0.2317***	0.0014***	0.0513***	0.0089***	0.0296***	0.0097***
	(0.0101)	(0.005)	(3e-04)	(3e-04)	(3e-04)	(0.0042)	(0.0021)
21	-1.29***	-0.2107***	-0.0011***	0.0539***	0.0087***	0.0274***	0.013***
	(0.0101)	(0.0054)	(3e-04)	(3e-04)	(3e-04)	(0.0041)	(0.002)
22	-1.3***	-0.1816***	-0.0033***	0.0566***	0.0087***	0.027***	0.0155***
	(0.0104)	(0.0054)	(3e-04)	(4e-04)	(3e-04)	(0.0038)	(0.0021)
23	-1.3***	-0.1512***	-0.0053***	0.0588***	0.0085***	0.0246***	0.0191***
	(0.0108)	(0.006)	(3e-04)	(4e-04)	(3e-04)	(0.0041)	(0.002)
24	-1.3***	-0.116***	-0.0072***	0.0615***	0.0082***	0.0233***	0.0185***
	(0.0105)	(0.0057)	(3e-04)	(4e-04)	(3e-04)	(0.0042)	(0.0017)
25	-1.3***	-0.0776***	-0.0091***	0.0645***	0.008***	0.025***	0.0169***
	(0.0112)	(0.006)	(4e-04)	(4e-04)	(3e-04)	(0.0042)	(0.0018)
26	-1.3***	-0.0377***	-0.0108***	0.0675***	0.0076***	0.0229***	0.0152***
	(0.0117)	(0.0064)	(4e-04)	(4e-04)	(3e-04)	(0.0037)	(0.0015)
27	-1.29***	0.0076	-0.0123***	0.0709***	0.0071***	0.0248***	0.0136***
	(0.0119)	(0.0067)	(4e-04)	(5e-04)	(3e-04)	(0.0041)	(0.0014)
28	-1.28***	0.0552***	-0.0136***	0.074***	0.0068***	0.0302***	0.0124***
	(0.0119)	(0.0063)	(5e-04)	(5e-04)	(4e-04)	(0.004)	(0.0015)
29	-1.27***	0.0973***	-0.0148***	0.077***	0.0064***	0.0327***	0.0095***
	(0.0108)	(0.0063)	(5e-04)	(5e-04)	(4e-04)	(0.0039)	(0.0015)
30	-1.26***	0.1417***	-0.0159***	0.0802***	0.0061***	0.0387***	0.0063***
	(0.0119)	(0.0061)	(6e-04)	(6e-04)	(4e-04)	(0.0039)	(0.0016)
Overall	-1.07***	-0.1441***	0.0262***	0.0455***	0.0054***	0.0014	3e-04
	(0.0072)	(0.0035)	(1e-04)	(2e-04)	(2e-04)	(0.0029)	(6e-04)
Unique obs.	9900	9900	9900	3627	3627	3618	3618

Note: Monetary values are in terms of 2020 Swiss Francs and are winsorized at the top 5%. The table displays the event study coefficients and standard errors from the Callaway and Sant'Anna (2021) estimator for the analyzed outcomes of differences between the two scenarios. Changes are relative to the outcomes at event time -1. The row “Overall” contains the average treatment effects on the treated. Stars indicate significance at 1% (***), 5% (**), and 10% (*) levels. The dependent variables are: (1) is “Difference in Liquid Wealth”, (2) “Difference in Total Net Wealth’, (3) “Difference in Total Consumption’, (4) “Difference in Conditional Stock Shares”, (5) “Difference in Conditional Stock Shares in Total Net Wealth”, (6) “Difference in Volume of Stocks, Conditional on Early Participation”, (7) “Difference in Cumulative Stock Returns, Conditional on Early Participation”.