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Borrowing Constraints, Home Ownership and Housing Choice: Evidence from Intra-Family Wealth Transfers

We study the impact of borrowing constraints on home ownership and housing demand by comparing the tenure choice and housing quality of consumers who receive intra-family wealth transfers to those that do not. Our analysis is based on household-level panel data providing information on the receipt of wealth transfers, changes in tenure status as well as changes in the size and quality of housing. On average we find that the receipt of a wealth transfer increases the propensity of consumers to transition from renters to home-owners by 6–8 percentage points (35% of the sample mean). Additional analyses suggest that this effect is unlikely to be driven by wealth effects and can thus be attributed to the relaxation of borrowing constraints. By contrast, wealth transfers do not increase the likelihood that existing homeowners “trade-up” to larger homes in better locations.

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ECONOMIC THEORY STIPULATES THAT—IN A WORLD of frictionless credit markets—permanent income and preferences govern a household’s consumption of durable and nondurable goods (Deaton 1992). However, if credit markets are imperfect, a household’s consumption plan may be limited by currently available income and wealth. Home ownership, in particular, is affected by borrowing constraints. Limitations on loan-to-value ratios (LTV) imply that, in order to obtain a residential mortgage, a household must have accumulated sufficient savings to make an initial down-payment. Thus, conditional on permanent income and preferences, households that receive wealth transfers earlier on in life, rather than later, may buy a house at a younger age.¹

In this paper, we examine the impact of intra-family wealth transfers on home ownership and household demand using household-level panel data from Switzerland. Our sample includes 4,958 households, for an average of 7 years each, between 2002 and 2012. We first study 2,615 households that do not own a home when first observed. We examine the propensity of these households to transition to ownership while in our sample. Further, we study 2,343 existing homeowners and examine whether they “trade-up” (i.e., move to larger homes in better locations). We relate changes in tenure status and housing quality to the receipt of wealth transfers by the household during the observation period.

We account for differences in preferences and expected permanent income by matching households on an extensive set of socio-economic indicators, including labor income, education, and measures of the economic background of a respondent’s parents. Moreover, our household-level panel data allow us to control for life-cycle events (e.g., taste-shifters such as marriage, childbirth, etc.) that may change demand for housing. We control for differences in housing affordability by matching our household-level panel data with regional information on price-to-rent ratios. To account for possible endogeneity in the timing of intra-family wealth transfers, we perform a set of robustness tests in which we instrument the timing of wealth transfers with deaths within the closer family.

We perform three tests to disentangle the extent to which wealth transfers may not only relax borrowing constraints, but also induce a revision of permanent income expectations. First, we benchmark the effect of one-time wealth transfers to comparable changes in annual income. Second, we analyze the impact of wealth transfers for households with high versus low expected permanent income. Our conjecture is that for households with high expected permanent income (e.g., with wealthy parents and high education) a wealth transfer of a given size is less likely to lead to a revision of permanent income. Third, we replicate our baseline estimates across different age groups. Our conjecture is that older households have more precise estimates about

1. The same reasoning applies of course to households that receive a larger share of their lifetime human capital income early on in life.

the size of anticipated wealth transfers—and are thus less likely to be affected by unexpected wealth effects.

Our baseline estimates show that—among initial renters—receiving a wealth transfer (of any size) is associated with a 6%–8% point higher propensity to transition to ownership. The magnitude of this average treatment effect is remarkable, given that 23% of the households in our sample transition from renters to homeowners during the observation period. Examining the effect of different sizes of wealth transfers we find that a transfer of 25'–50' CHF (50'–100' CHF) is associated with a 13 percentage point (17 percentage point) higher propensity to transition to ownership among initial renters.

Our three tests suggest that the effect of wealth transfers on housing are unlikely to be driven by wealth effects and thus can be attributed to the relaxation of borrowing constraints: First, the estimated effect of a wealth transfer is 50 times larger than the effect of a similar increase in wage income. Second, the estimated effect of a given wealth transfer is similar among households with low and high expected permanent income. Third, the estimated effect of a given wealth transfer is similar among younger and older households. In fact, when compared to the subsample mean, wealth transfers induce a slightly larger effect among older households.

We find no evidence that wealth transfers induce existing homeowners to trade up to larger homes or homes in better neighborhoods. This result is consistent with two key features of the housing market in Switzerland that also hold in further European countries (e.g., Germany): Low rates of home ownership and a comprehensive market for rental properties.² These features of the housing market imply that households, which do not have the wealth required to make a down payment on their preferred home, may be able to rent that home instead of buying a smaller home in a less attractive area.

The impact of borrowing constraints on home ownership has recently received increased attention in light of macroprudential policies designed to reduce systemic risk in the banking sector. In the aftermath of the 2007–2009 financial crisis, regulators in Spain, Norway, Sweden, Hong-Kong, and many other countries have introduced policies that tighten borrowing constraints in the residential mortgage market (Duca, Muellbauer, and Murphy 2010, Hong Kong Monetary Authority 2011, de Lis et al. 2013, ESRB 2016). The introduction of these macroprudential policies has been accompanied by concerns that especially younger households may find it more difficult to enter the housing market.³

In light of these policy discussions, Switzerland provides an interesting economic environment to study the effect of wealth constraints on home ownership. In recent years, Switzerland has witnessed a strong appreciation of house prices combined with a fast increase in mortgage lending. Between 2000 and 2017, the volume of

2. Home ownership rates in Switzerland stand just over 40% and in Germany they hover between 41% and 48% (Eurostat; QZ <http://qz.com/167887/germany-has-one-of-the-worlds-lowest-homeownership-rates/>).

3. <http://www.irishtimes.com/business/economy/noonan-wants-review-of-first-time-mortgage-cap-1.2355909>.

outstanding residential mortgages more than doubled, from 308 billion CHF to 730 billion CHF, and now stands at 110% of GDP.⁴ Fearing that a decrease in house prices may negatively impact on financial stability, Swiss regulators enacted macroprudential policies that increased down payment requirements and shortened repayment periods in the residential mortgage market.⁵ As in other countries mentioned above, there are concerns that these policies may exacerbate borrowing constraints for some households.⁶

Our analysis contributes to the empirical literature that uses intra-family wealth transfers to study the effects of borrowing constraints on tenure choice and housing consumption.⁷ Guiso and Jappelli (2002) find that wealth recipients buy larger homes in Italy, although they do not buy at a substantially younger age. Kolodziejczyk and Leth-Petersen (2013) find no relationship between parental wealth or wealth transfers and home ownership in Denmark. This, however, may be associated with the unique nature of the Danish market. Engelhardt and Mayer (1998) study the effect of wealth transfers on housing choices in the United States. They find that households, which receive wealth transfers, make larger down-payments and transition to larger homes than households that do not receive wealth. We extend this literature along several dimensions. First, we are able to observe changes in tenure status and housing choices for the same households over time and relate these changes to the timing of incoming wealth transfers. Second, we are able to control for the occurrence of significant life-cycle events (marriage, child-birth) that may confound the relation between wealth transfers and housing choices during this period. Third, we analyze wealth transfers in a country that, like many of its central-European neighbors, has a well-developed rental market. As mentioned above, we show that the extent to which borrowing constraints impact on tenure choice and especially housing quality may be strongly influenced by this.

We also contribute to the broader literature on wealth effects in household finance. Andersen and Meisner Nielsen (2011) document that wealth transfers due to unanticipated inheritances increases financial market participation in Denmark. Importantly, however, the authors do not distinguish inheritances that induce changes in permanent income (inheritances are unexpected in size) from those that may relax liquidity constraints (unexpected timing of inheritance, but the size of the inheritance is as expected). Briggs et al. (2015) study the impact of windfall gains from lottery wins on stock market participation in Sweden. They show that these unexpected increases in permanent income lead to a significant increase in stock market participation. We contribute to this literature by examining how wealth transfers impact on participation

4. 1.10 CHF = 1 Euro in June 2016; total mortgage volume over 970 bn CHF.

5. <http://voxeu.org/article/macropu-policy-switzerland>.

6. <http://www.nzz.ch/finanzen/bitte-eigenkapital-nachschiessen-1.18219751>.

7. Linneman et al. (1997) make use of the U.S.-based survey of consumer finance to look at the impact of borrowing constraints. In their paper, they extend analyses and methodologies previously developed by Linneman and Wachter (1989) to simulate household constraint and confirm that wealth constraints restrict ownership. They estimate the degree to which a household may be considered constrained. Our analysis makes use of observable wealth transfers to differentiate constrained and unconstrained households.

in real asset markets (homeownership) rather than financial asset markets. Hereby, we disentangle the impact of wealth transfers due to a relaxation of borrowing constraints from their impact due to wealth effects.

The remainder of this paper is structured as follows. Section 1 presents a stylized model of borrowing constraints, tenure choice, and housing choice from which we derive our empirical hypotheses. Section 2 describes our dataset. Section 3 presents our analysis of the effects of wealth transfers on the propensity of households to transition to home ownership. Section 4 examines whether existing homeowners trade up the property market in response to a wealth transfer. Section 5 concludes.

1. BORROWING CONSTRAINTS, TENURE CHOICE, AND HOUSING CHOICE

In this section we present a stylized model of intertemporal choice to clarify under which circumstances wealth transfers may relax borrowing constraints on tenure status and housing choice. Our aim is to illustrate how the timing of an expected wealth transfer impacts on tenure choice (ownership versus renting) and housing choice (size and quality of housing) when households face frictions in the mortgage market. We hereby clarify the difference between the relaxation of borrowing constraints and wealth effects arising from transfers that deviate from their expected size.

Consider households that live for two periods; $t = 1, 2$. In each period each household chooses how much housing H_t and how many nondurable consumption goods C_t to consume. We assume for simplicity that households do not discount future utility and are risk neutral. The preferences of households can be represented by the following utility function:

$$U = u(H_1, C_1) + u(H_2, C_2), \text{ with } u'_H, u'_C > 0 \text{ and } u''_H, u''_C < 0.$$

The costs of a unit of the nondurable consumption good C_t is normalized to 1. In each period t households choose to rent or buy a house. We denote $h_t \in [0; 1]$ as the tenure choice in each period, which is 1 for homeownership and 0 for renting. Houses can be bought or rented in continuous size (or quality) H_t . The rental cost of housing per unit and period r is constant. The user cost of housing depends on the price of purchasing the house, expected price appreciation, depreciation of the house, property taxes as well as tax deductions for maintenance and mortgage interest payments. Moreover, user costs would include all transaction costs of buying and selling the house at the beginning/end of the period. User costs k_t may thus be heterogeneous across households due to variation in tax benefits for home ownership.⁸

8. In all jurisdictions (cantons/municipalities) within Switzerland households are subject to income and wealth tax. The net value of owner-occupied housing (value of house minus outstanding mortgage) is subject to wealth tax. Hereby the value of the house is estimated by local tax authorities and typically significantly lower than market values. Thus, with respect to wealth taxation there is a tax advantage to holding wealth in owner-occupied housing as opposed to financial assets. Considering income tax, rental

We assume that user costs do not differ across periods. For simplicity we assume the interest rate to be zero.

Wage income is received at the beginning of each period. For simplicity we assume that wage income is nonstochastic and identical in both periods $Y_1 = Y_2 = \frac{Y}{2}$. By contrast, wealth transfers are stochastic both with respect to their size and their timing. Each household receives an intra-family wealth transfer, whereby the transfer is expected to be either high $W_i = \tilde{W} + X$, average $W_i = \tilde{W}$, or low $W_i = \tilde{W} - X$ with equal probability. Thus the expected size of the wealth transfer of each household is $E(W) = \tilde{W}$ and the standard deviation of the wealth transfer is given by X . The timing of wealth transfers is also uncertain. Households receive their wealth transfer either at the beginning of period $t = 1$ or at the beginning of period $t = 2$. Importantly, we assume that the realization of the timing of wealth transfers is independent of the realization of their size.

Based on the above assumptions we can distinguish four types of households in period 1 (see Figure 1). Households of Type I receive no wealth transfer in period 1. These households experience no change in expected permanent income as their expected wealth transfer for period 2 is $W_i = \tilde{W}$. Type II households receive a wealth transfer of $W_i = \tilde{W}$ in period 1. These households also experience no change in expected permanent income. Type III households receive a wealth transfer of $W_i = \tilde{W} - X$ in period 1. These households experience a downward revision of permanent income. By contrast Type IV households receive a wealth transfer of $W_i = \tilde{W} + X$ in period 1. These households experience an upward revision of permanent income.

1.1 Home Ownership and Housing Choice without Borrowing Constraints

Prior to the realization of the size of the wealth transfer W_i the expected budget constraint of a household can be written as:

$$\sum_{t=1,2} H_t \cdot (h_t \cdot k_i + (1 - h_t) \cdot r) + C_t \leq \tilde{W} + Y. \quad (1a)$$

Once the size of the wealth transfer of the household is realized (in period 1 or period 2) the budget constraint is adapted to:

$$\sum_{t=1,2} H_t \cdot (h_t \cdot k_i + (1 - h_t) \cdot r) + C_t \leq W_i + Y. \quad (1b)$$

payments on housing are not tax deductible. By contrast, owner-occupied housing is subject to income-taxation: First, homeowners are taxed on the imputed rent of their home (i.e., the rent they could earn on that dwelling). Second, mortgage interest payments are income-tax deductible. The imputed rent on owner occupied housing is estimated by local tax authorities and is again typically much lower than market rents. Thus from an income tax perspective, homeowners with large outstanding mortgages typically fare better than renters. The relative tax advantage of homeownership to renting varies by jurisdiction as marginal tax rates on income and wealth vary by canton and municipality. Moreover the assessment methods for house values and imputed rent vary across jurisdiction.

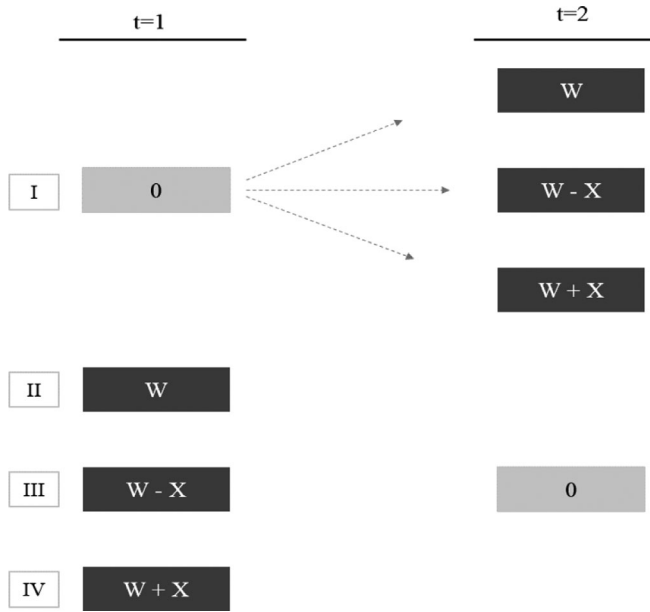


FIG. 1. Possible Wealth Transfers—Timing and Size.

NOTES: This figure helps clarify the discussion in Section 1. It shows households that may receive no wealth in period 1, but expect W in period 2 (type I households). Households that do receive wealth transfers in period 1 may receive the amount they expected, W (type II households). Households may, however, receive less (more) than expected (type III and IV households).

From (1a) and (1b) we can see that with perfect credit markets, the tenure choice of households (renting versus buying) is independent of the realized timing and size of the wealth transfer W_i . In each period, tenure status would be determined only by the user cost k_i as opposed to the rental cost r of housing. All households for which $k_i \leq r$ will buy, while all households for which $k_i > r$ will rent. Given that we assume that k_i and r are constant over time, the optimal tenure choice of the household $h^*(r, k_i)$ is the same in each period.

The optimal level of housing in each period H_t depends on preferences for housing and consumption goods, the (user or rental) cost of housing, and (expected) permanent income. Households, which receive a wealth transfer in period $t = 1$, know their permanent income $W_i + Y$ for sure. In the absence of discounting and a zero interest rate, the concavity of the utility function implies that the optimal volume of housing and nondurable consumption is constant over time. We can therefore denote $H^*(W_i + Y, k_i, r)$ as the optimal number of housing units the household would want to consume in each period. Households that do not receive a wealth transfer in period $t = 1$ have an expected permanent income of $\tilde{W} + Y$ at the beginning of $t = 1$. The receipt of the wealth transfer at the beginning of period $t = 2$ can lead to a revision

of housing and/or other consumption choices if the wealth transfer is either below average ($\bar{W} - X$) or above average ($\bar{W} + X$).

PREDICTION 1. *In the absence of borrowing constraints the tenure status h^* of a household depends neither on the size nor on the timing of wealth transfers. By contrast, the housing choice H^* of households is affected by the size of wealth transfers. In particular, the realization of a wealth transfer $\bar{W} \neq W_i$ in either period can lead to a revision of housing (and other) consumption due to a revision of permanent income expectations.⁹*

It is important to note that the size of wealth transfers is irrelevant for tenure choice due to our (implicit) assumption that households have no preference for owning rather than renting a home. This assumption is motivated by the context of our empirical study in which home-ownership rates are low and renting is common, independent of socioeconomic status. However, in a context of strong social norms favoring home ownership, wealth transfers that deviate from expected values could also influence tenure choice.¹⁰ In such a context it is feasible that an upward revision of permanent income due to an unexpectedly large wealth transfer may induce a wealth effect that not only increases housing demand H^* but also changes optimal tenure choice h^* .

1.2 Home Ownership and Housing Choice with Borrowing Constraints

In the residential mortgage market, lenders impose two main constraints on potential borrowers; a leverage constraint (loan to value ratio) and an affordability constraint (payment-to income ratio). In this paper, we are interested in how the timing of wealth transfers alleviates the leverage constraint by enabling households to make the down payment on a house. In the following we therefore model tenure and housing choice in the presence of a leverage constraint.¹¹ In our empirical analysis we account for potential effects of affordability constraints by controlling for household income, regional price-to-rent ratios, and the period of observation.¹²

9. As a second-order effect, a change in permanent income could also affect tenure choice h^* if it affects the user cost of housing k_t through the marginal benefit of tax breaks for homeowners (Henderschott and Slemrod 1982).

10. See Béland, Howard, and Morgan (2015) for a review U.S. social policies from the 1930s that helped home ownership become the societal norm and Goodman and Mayer (2018) for a discussion of the evolution of U.S. home ownership rates among different demographics as well as a discussion of its benefits (particularly as applies to older households).

11. The leverage constraint has been shown to be by far the more binding restriction, especially in times of low interest rates (Linneman and Wachter 1989, Duca and Rosenthal 1994). Fuster and Zafar (2016) find that a household's stated likelihood of transitioning to ownership diminishes with rising LTVs. Using a short U.S. panel, Haurin et al. (1997) show that young households are sensitive to the relative cost of owning versus renting, but most affected by down payment requirements. Chiuri and Jappelli (2003) also show that lower initial down-payment ratios are associated with higher rates of ownership, especially among younger households. For Switzerland Brown and Guin (2015) observe significant bunching of mortgage contracts at the mandated LTV threshold of 80%, while the typical PTI threshold of 33% seems to be much less binding.

12. We assume that households do not have access to unsecured credit (consumer credit), which would allow them to bring forward expected future income and wealth to the first period. Otherwise households could circumvent leverage constraints in the mortgage market by borrowing against future wealth transfers and income in the consumer credit market.

The leverage constraint in the mortgage market implies that tenure status h and housing choice H may depend on the timing of wealth transfers. Consider those households who would choose to buy a house ($h^* = 1$) under perfect credit market access. These “would-be-homeowners” are households that have a low user cost compared to the rental cost of housing, (i.e., $k_i \leq r$). Due to the leverage constraint, the volume of housing a household can buy in period t is limited by its accumulated financial wealth at the beginning of each period A_t . Defining LTV as the maximum loan-to-value ratio and p_t as the purchasing price of a unit of housing, the leverage constraint implies $p_t \cdot H_t \cdot (1 - LTV) \leq A_t$.

We are particularly interested in how the timing and size of wealth transfers affects the initial tenure and housing choice in period 1. Referring to Figure 1, we can describe the leverage constraint for four types of households, depending on the size of wealth transfers in period 1:

$$\begin{aligned}
 p_t \cdot H_t \cdot (1 - LTV) \leq & \begin{aligned} & Y/2 && \text{for Type I households} \\ & \frac{Y}{2} + \tilde{W} && \text{for Type II households} \\ & \frac{Y}{2} + \tilde{W} - X && \text{for Type III households} \\ & \frac{Y}{2} + \tilde{W} + X && \text{for Type IV households} \end{aligned} \tag{2}
 \end{aligned}$$

From condition (2) we can see that with a leverage constraint, both the timing and the size of the realized wealth transfer may constrain tenure choice h^* and housing choice H^* .

- First, compare Type II to Type I households: At the beginning of period 1 neither of these households has revised their permanent income expectations and thus their optimal housing choice H^* . However, while Type II households have received their expected wealth transfer $W = \tilde{W}$ in period 1, Type I households have not. As illustrated by condition (2), Type II households are more likely to meet the leverage constraint than Type I households.
- Next, compare Type II to Type III and Type IV households: All of these households receive their wealth transfer in period 1. However, compared to Type II households, Type III (IV) households receive a transfer below (above) the expected value. First, this leads to a revision of permanent income and thus of optimal housing choice H^* . Second, as illustrated by condition (2), the larger the size of the wealth transfer, the more likely the household is to meet the leverage constraint.

Households that are constrained by the LTV restriction (i.e., would be homeowners) in period 1 have two potential ways to adjust their behavior: Some constrained households may buy a smaller house (or a house in an undesirable area) in period 1 and then trade-up in period 2 (i.e., move to a larger house in a different neighborhood). These are likely to be households with a strong monetary advantage of homeownership vis-a-vis renting (i.e., a very low user cost of housing $r > > k$).¹³

13. This could be the case, for instance, under a tax-regime that strongly favors ownership over renting. In Switzerland, ownership is generally considered attractive, although its relative benefit to renting will vary by region. Households must pay tax on an imputed rent if they are owner/occupiers (as discussed above).

Other households will rent a house in period 1 and then transition to ownership in period 2. These are likely to be households with a weaker preference for homeownership *vis-a-vis* renting (i.e., a higher user cost of housing).

PREDICTION 2. In the presence of borrowing constraints, the delayed timing of anticipated wealth transfers can affect initial tenure choice (rent rather than own) or initial housing choice (low initial size or quality) of would-be homeowners. Borrowing constraints are relaxed when anticipated wealth transfers arrive. Borrowing constraints are more likely to be relaxed the larger the size of the received wealth transfer.

1.3 Empirical Hypotheses

Our model clarifies how the timing and size of anticipated but stochastic wealth transfers impact on tenure decisions and housing choice. Importantly, the model highlights the differences between borrowing constraints due to the delayed timing of an expected wealth transfer and the wealth effects due to wealth transfers that deviate from their expected size. Our predictions lead us to two main hypotheses regarding the relation between wealth transfers, tenure status, and housing choice in the presence of borrowing constraints.

Hypothesis 1 (Wealth transfers and tenure status): (i) Conditional on expected permanent income, preferences for housing, as well as the user cost and rental costs of housing, the receipt of an expected wealth transfer $W = E(W)$ relaxes borrowing constraints and is associated with a higher propensity for renters to transition to homeownership. (ii) Wealth transfers that are higher (lower) than their expected value increase (decrease) the propensity transition to homeownership due to borrowing constraints and/or a revision of permanent income expectations.

Hypothesis 2 (Wealth transfers and housing choice): (i) Conditional on expected permanent income, preferences for housing, as well as the user cost and rental costs of housing, the receipt of an expected wealth transfer $W = E(W)$ relaxes borrowing constraints and is associated with a higher propensity for existing homeowners to “trade up” to larger and higher quality homes. (ii) Wealth transfers that are higher (lower) than their expected value increase (decrease) the propensity of homeowners to trade up due to borrowing constraints and/or a revision of permanent income expectations.

It should be noted that in our model we made a strong assumption that affects the relative importance of borrowing constraints for tenure versus housing choice: We assumed that housing in all different sizes and quality is available for purchase and rent. This assumption holds in our empirical context (see Section 2). But it

The amount due will vary across cantons in accordance with the local tax rate. Moreover, households must pay wealth tax based on the net-value of their home. Different cantons have different metrics for determining a houses value and do not, as a rule, make use of the sales price as a basis.

may not hold in countries or regions dominated by owner-occupied housing and less developed rental markets. In such contexts, borrowing constrained households may not be able to rent their preferred home and will therefore be more likely to buy an inferior home. Wealth transfers would thus impact more on housing choice relative to tenure choice.

2. DATA DESCRIPTION AND METHODOLOGY

Our main data source is the Swiss Household Panel (SHP).¹⁴ Our sample includes all households that were covered by the SHP for at least 3 years during the period 2002 and 2012.¹⁵ The sample includes 4,958 households with a total of 39,545 household-year observations. See Table A1 for an overview of the number of households by year of first observation and number of years in sample.

The panel structure of our data allows us to study the relationship between the receipt of wealth transfers and the change in tenure status and housing choice for the same household over time. Our main analysis is based on a between-household analysis in which we relate changes in tenure status and housing choice over the entire observation period, to the receipt of wealth transfers over that same period. This approach is motivated by the fact that we only observe each household for a limited time-span (on average 7 years) of their life-cycle. A between-households estimation is suited to comparing changes in tenure and housing choices across households, specific to this point in their respective life-cycles. Alternatively, we could use our annual panel data to estimate year-on-year changes in tenure status and housing choice during the observation period. We exploit the annual time dimension in a hazard analysis. We discuss the corresponding results in section 3.3 when we report on various robustness tests to our main analysis.¹⁶

To examine the relationship between the receipt of wealth transfers and changes in tenure status, we study 2,615 households that are initial renters. For each household i in each year t the SHP reports the tenure status (i.e., whether the household owns or rents the dwelling in which she lives). Our first dependent variable captures changes in tenure status for each household. For a household that we observe for the first time in year t_i and last in year T_i , we define *Homeownership* = 1 if the household was a renter in period t_i and transitions to ownership by T_i . By contrast,

14. The SHP is based on annual surveys administered by FORS at the University of Lausanne. The first wave of the survey was initiated in 1999 and comprised over 7,700 households that were intended to be representative of Switzerland's diverse demography. In order to counteract the natural attrition inherent to such surveys, new families were added in each year. More than 1,800 households have been observed over the entirety of the survey's runtime. For further details on the survey see <http://forscenter.ch/en/our-surveys/swiss-household-panel/>.

15. Given changes in the construction and definition of key variables, we cannot make use of the survey waves from 1999 to 2001.

16. We relate the change in tenure status in year t to wealth transfers (received since first observation in the data). The survival model allows us to better pinpoint whether households are more likely to transition to ownership *after* they receive a wealth transfer. Its disadvantage lies in the fact that it does not account for wealth transfers that are, for whatever reason, recorded after a household transitions to ownership.

Homeownership = 0 if the household was a renter in period t_i and still a renter in T_i . Summary statistics in Panel A of Table A2 show that 23% of initial renters transition to homeownership while in the survey.

We study the relationship between the receipt of wealth transfers and changes in housing choices in the complementary sample of 2,343 initial homeowners. For this subsample we examine whether a household moves, as well as whether it changes house size or house quality. For each household in each year the SHP reports whether the household lives in the same dwelling as last year, as well as indicators of the size and quality of the chosen home. A household is considered to have moved if it reports a location change since the last survey wave. The dummy variable *MoveHouse* captures whether the household changed its dwelling any time between t_i and T_i . Our proxy of house size measures the number of rooms of the home. The variable $\Delta HouseSize$ captures changes in the number of rooms of the dwelling in T_i minus that in t_i .¹⁷ Our proxy for the quality of the home captures on a scale of 0–3 to what extent the respondents are satisfied with noise, pollution, and vandalism conditions in their neighborhood. The variable $\Delta LocationQuality$ captures changes in the perceived quality of the location of the dwelling in T_i minus that in t_i . Summary statistics in Panel B of Table A2 shows that over 20% of initial homeowners move while observed by the survey. The average size of the dwelling decreases by 0.1 rooms while the perceived location quality remains unchanged.

The explanatory variable in both analyses is an indicator of whether a household receives a wealth transfer during our observation period. We define a wealth transfer as receiving a financial transfer from family members outside the immediate household (this may include inheritances, bequests, or gifts). The variable *WealthTransfer (size)*, takes on the value of 1 if the household received a wealth transfer of a particular size range in any year between t_i and T_i .¹⁸ Figure 2 illustrates the share of households, which received a wealth transfer of different size ranges. The figure shows that among initial renters (homeowners) 38% (28%) report no wealth transfer while observed in the survey. At the other end of the scale 9% (16%) of initial renters (owners) at least once receive a wealth transfer of at least 100'000 CHF while in our sample.¹⁹

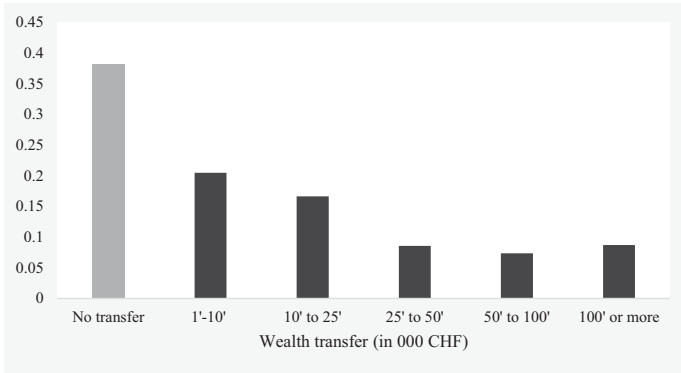
In our baseline estimates we employ both a dummy denoting whether a household receives any wealth transfers as well as a vector of indicator variables that capture

17. The survey does include a more precise indicator of the size of the home in squared meters. This however relates to the living space and not to the lot size (including balcony, terrace, garage garden, etc.). Moreover, this indicator is missing for many observations (only one-third of initial homeowners provide information in both period 0 and period T). By contrast all households in our sample report the number of rooms. The reason for this is that in Switzerland the size of a residential home is typically quoted by its number of rooms. Hereby the number of rooms quoted equals the total number of rooms minus kitchen and bathrooms. Importantly, large living rooms are typically counted as 1.5 rooms, so that the number of rooms quoted at least partly also reflects the size of the living room.

18. Our baseline results (reported below) remain unchanged when we make use of the total value of wealth transfers a household has received during its time in the sample.

19. Brülhart, Dupertuis, and Moreau (2018) look at long span data in Switzerland and find that inheritance has been outpacing income growth since the 1970s. A substantial amount of total wealth (just under 60%) is transferred via inheritance.

Panel A: Wealth transfers among initial renters (n=2615)



Panel B: Wealth transfers among initial owners (n=2343)

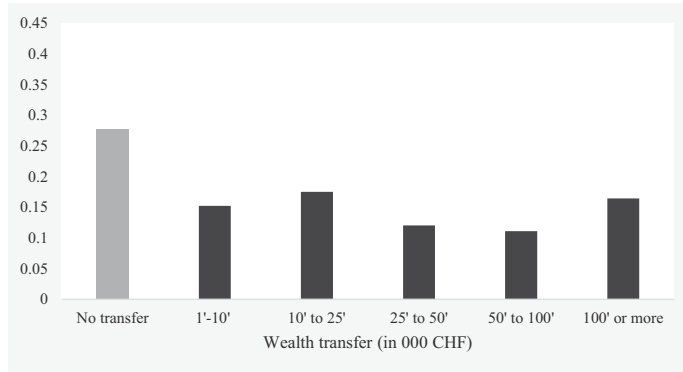


FIG. 2. The incidence of Wealth Transfers.

Panel A: Wealth transfers among initial renters ($N = 2,615$). Panel B: Wealth transfers among initial owners. ($N = 2,343$)
 NOTES: This figure depicts the propensity of a household to receive a “Wealth Transfer” of respectively different sizes during the observation period. Separate distributions are presented for households that are renters/homeowners at first observation.

five different ranges of wealth transfers (the omitted category is no wealth transfer); 1'–9.9' CHF; 10'–24.9' CHF; 25'–49.9' CHF; 50'–99.9' CHF; at least 100' CHF. This approach allows us to examine critical thresholds in the relationship between wealth transfers, tenure status, and housing choice. Moreover, by enabling a comparison to similar changes in annual income we can gauge the relative importance of the two potential channels through which a wealth transfers may impact on tenure status and housing choice: the relaxation of borrowing constraints and wealth effects.

As suggested by our model we need to condition tenure and housing choices on expected permanent income, preferences for housing, and the relative costs of owning versus renting homes. The SHP provides a broad set of household-level indicators that proxy for expected wealth and income as well as for preferences related to housing and home ownership. Moreover, we match households in the SHP by location with

data on the regional price to rent ratio for 103 regions²⁰ covered in the survey to obtain indicators of the costs of purchasing or renting a house.

For all control variables, which capture variation in income expectations, preferences, and housing costs across households we employ predetermined values, that is, the value at the first observation of the household t_i . In addition, the underlying panel data allows us to account for income changes, taste shifters, and changes in housing prices during the observation period, that is, changes in these values between t_i and T_i .

While it is important to account for these taste shifters, it is possible that the use of contemporaneous changes in control variables may violate the assumption of exogeneity: For example, consumers who receive a wealth transfer may subsequently decide to have (more) children, which in turn may lead them to alter their tenure and housing choices. As pointed out above, we are interested not in an aggregate effect of wealth transfers on tenure choice, which might include a mediated-effect, induced by a change in taste shifters for other households. To ensure we are capturing only the part of the effect related to an alleviation of borrowing constraints, we present our baseline specifications with and without the contemporaneous changes in control variables for our main analyses. Table A2 presents summary statistics for all variables employed in the analysis while Table A3 details definitions.

3. WEALTH TRANSFERS AND TENURE STATUS

Our analysis in this section is based on the sample of 2,615 households that are initial renters. For this sample, we examine whether changes in tenure status are related to the receipt of wealth transfers. Figure 3, Panel A displays the likelihood of a household transitioning to ownership, conditioned on receiving any wealth transfers as well as transfers of different sizes.

The figure shows that the receipt of a significant wealth transfer is associated with a higher propensity to transition to ownership. On average, households that receive any wealth transfer are 11% points more likely to transfer to homeownership than households that receive no wealth at all. However, the propensity of a household to transition to homeownership is no different for households that receive a transfer of less than 10' CHF than for households that receive no wealth transfer; about 16% points. By contrast, the propensity to become a homeowner increases by 10% points for households that receive of wealth transfer of 10'–25' CHF. It increases again for households who receive between 25 and 50' CHF as well as for successively larger wealth transfers. This pattern in the data is reasonable considering house prices and lending conditions in Switzerland during our sample period. During this period, the mean house price amounted to just over 500' CHF. The minimum down payment required by banks was 20% of the house price (this implies a maximum LTV ratio of 80%). Thus, to relax the borrowing constraint by providing a significant share of the necessary down payment, a sizeable wealth transfer would be necessary.

20. The Swiss Bureau of Labor splits Switzerland into 103 fictive labor market regions. These are regions within which a single labor market theoretically exist, because individuals can commute within the area in under 30 minutes (typically).

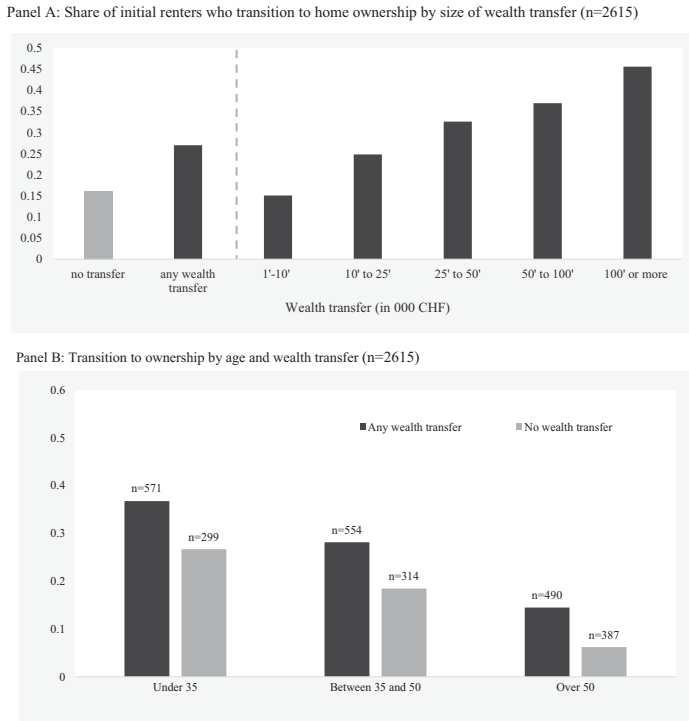


FIG. 3. Wealth Transfers and Transition to Home Ownership.

Panel A: Share of initial renters who transition to home ownership by size of wealth transfer ($N = 2,615$). Panel B: Transition to ownership by age and wealth transfer ($N = 2615$).

NOTES: For initial renters, this figure depicts the propensity of a household to transition to Home Ownership. Panel A conditions on the receipt of wealth transfers of different sizes. Panel B conditions on age-group of the household (at first observation) and whether the household received any wealth transfer. Numbers above each bar in Panel B indicate sample size.

3.1 Identification

Our objective is to examine how wealth transfers impact on tenure choice by relaxing borrowing constraints. We face two identification challenges: a potential selection effect as well as the fact that transfers may not only relax borrowing constraints, but also induce potential wealth effects.

Selection on observables. Households that receive a wealth transfer may have been more likely to transition to homeownership, even if they had not received a wealth transfer. Households that receive wealth transfers may have different preferences for housing and different expected levels of permanent income compared to households that do not receive wealth transfers. Households that receive wealth transfers are more likely to come from a wealthier family background. These households may have higher expected lifetime income due to a possibly better education as well as due to expected wealth transfers. Furthermore, respondents with a wealthier family

background may have stronger preferences for housing and home ownership due to childhood experiences.²¹

The receipt of a significant wealth transfer during our observation period is also possibly correlated with changes in preferences for housing due to life-cycle events. Some wealth transfers—in particular predeath bequests—may actually be triggered by the successful search for a new home by households, which experience a change in preferences for housing (due to marriage or childbirth). For the nearly 400 households in our sample, which both transition to ownership and receive a wealth transfer Figure A1 depicts the relative timing of home purchases and wealth transfers. The largest share of households (68%) transition to ownership within 2 years of receiving a wealth transfer. Some of these wealth transfers are likely to be predeath bequests triggered by the recipients themselves. Others are likely to be the result of a spurious correlation of wealth transfers and home ownership (e.g., due to life-cycle events such as marriage, children).

To account for potential selection effects our main identification strategy is to match households on an extensive set of socioeconomic characteristics. Hereby we control for differences in preferences, expected permanent income and house prices (at first observation) as well as for changes in these variables during the observation period. In a robustness test, we make use of an alternative identification strategy that follows Andersen and Meisner Nielsen (2011) and uses intra-family deaths as an instrument for the exogenous timing of anticipated wealth transfers (see Section 3.3). This strategy allows us to better account for the potential endogeneity of wealth transfers to life-cycle events, which may change preferences for housing and homeownership.

Motivated by Figure 1, our baseline empirical strategy is to compare those households who do not receive wealth (type I households) with all those who do (type II, III, and IV households). This is akin to estimating the average treatment effect on the treated. Among our sample of initial renters, we label Y_1 as the potential change in tenure status (transition to homeownership) for households if they receive a wealth transfer during our observation period and Y_0 as the potential change in tenure status for households if they do not receive a wealth transfer. We assume that the following conditional independence relationship holds: Conditional on the observables X_i those households that receive a wealth transfer ($W = 1$) and those who do not ($W = 0$) would have the same potential change in tenure status if both would not have received a wealth transfer.

$$E[Y_0 | W = 1, X_i] = E[Y_0 | W = 0, X_i]. \quad (3)$$

We can then estimate the average treatment effect on the treated (ATET) as

$$\begin{aligned} E[Y_1 | W = 1, X_i] - E[Y_0 | W = 1, X_i] &= E[Y_1 | W = 1, X_i] \\ &- E[Y_0 | W = 0, X_i]. \end{aligned} \quad (4)$$

21. See Aratani (2011) for a discussion of preference transmission. They point out that preference transmission is likely to be strongest in households that we would classify as having high permanent income.

Our vector of confounding variables X_i should capture all differences in housing preferences and expected permanent income between treated and nontreated households that could violate the conditional independence assumption in (3). It is evident that the treated and untreated households may differ both in *ex ante* housing preferences and expected permanent income as well as in the changes thereof during our observation period. In addition, X_i should capture differences in the costs of owning versus renting a house across locations where the treated and untreated groups live.

To capture differences in permanent income, X_i includes respondent *Education* and *Age*. We further include household annual *Income* at first observation in the sample as well as the changes thereof (Δ *Income*) during the observation period. We account for expected wealth transfers by exploiting information on the socioeconomic background of respondents as reported in the SHP. First, we employ an indicator of the economic activity of the parents when the respondent was a teenager. Hereby, respondents whose parents were self-employed with employees, partners, or managers in a firm are classified as having *Wealthy parents*. Second, we account for the number of *Siblings* of the respondent, as large wealth transfers are less likely *cet. par.* for respondents with siblings.

To account for differences in preferences for housing (and possibly also home ownership) and we include in X_i an indicator of whether a household is *Married* (or living together) or has *Children*. Importantly, we account not only for marital status and children at first observation, but also for changes in these “taste shifters” over the observation period. Moreover, we again exploit information on the socioeconomic background of respondents: The variable *Intact home* captures whether at least one respondent (in a two person household) lived with both parents while growing up. Respondents who grew up in “intact” homes may have a stronger preference for home ownership and higher permanent income.²²

To account for differences in the relative costs of owning versus renting houses we match households by location on the *Price/rent* ratio as well as the changes thereof during the observation period (Δ *Price/rent*). Furthermore, to account for differential tax treatment of home ownership across the Swiss cantons we include canton-fixed effects. Finally, we account for the year in which a household entered the survey.

For some households we observe additional information on repayment behavior, willingness to make plans as well as political affiliations. The ability to repay loans, measured by whether the household has fallen into repayment *arrears*, will factor in a household’s mortgage application decision. The variable *Planning ability* may be associated with the demand for housing through the personal discount factor. The variable *Political lean* (e.g., if right-leaning where right = 10) may be associated with a preference for housing and homeownership.

We estimate the ATET in equation (4) using three different estimation techniques. Our baseline model is a linear probability model. Given the binary nature of our dependent variable, we additionally estimate a probit model. Furthermore, given the

22. See Hubers, Dewilde, and De Graaf (2016) for a discussion of the preference formation for home ownership among individuals affected by divorce at an early age.

binary nature of our treatment “receiving wealth” we further estimate a propensity-score matching model (radius matching).

Note that the ATET effect in equation (4) is identified in a population of initial renters. The estimated effect is thus likely to differ from the average treatment effect (ATE) in the overall population or the population of would-be-homeowners. By focusing on households that rent at first observation our sample is likely to be overpopulated by households that prefer renting to buying, especially among the older cohorts. Many households that prefer to own a house may have already bought a home before we observe them for the first time. In line with this concern, Figure 3 (Panel B) shows that the propensity of households to transition to home ownership declines with their age at first observation. Arguably, our ATET estimates are closer to the ATE for would-be homeowners in the subsample of young households rather than in the subsample of older households. This is one reason why we also report results separately by respondent age group.

Accounting for wealth effects. Our second identification challenge is to disentangle the effect of a wealth transfer on tenure status that is due to the relaxation of borrowing constraints, from potential wealth effects due to a revision of permanent income expectations. Figure 1 illustrates that the receipt of a wealth transfer itself will lead to a revision of permanent income if the received wealth transfer deviates substantially from its expected value. Thus, in order to control for potential wealth effects, it is not sufficient to account for temporal variation in initially expected permanent income. We also have to account for potential deviations of received wealth transfers from their expected value.

We account for the potential wealth effects of wealth transfers on treated households with three different approaches. First, we compare the effect of received wealth transfers to the effect of changes in permanent income due to changes in annual wage income over the observation period. An underlying assumption of this analysis is that observed increases in wage income—especially those associated with job changes—are not perfectly anticipated by households (discussed below). A wage change affects households for many years and may significantly impact on permanent income. One-time wealth transfers (of the same magnitude as a wage hike) exert a much smaller effect on permanent income, though they may alleviate immediate borrowing constraints.

Second, we split our sample by whether households are likely to have a high or low expected permanent income. If wealth effects drive our results, we should find that the effect of a transfer of a given size is particularly concentrated among those households with a low expected permanent income: A large wealth transfer should imply a larger revision of permanent income for such households than for households with high expected permanent income. We classify households as having potentially high permanent income if they have above average education and have at least one wealthy relative.

Third, we compare the effects of wealth effects across households of different age groups. Our conjecture is that older households should have more precise expectations

about the size (and timing) of wealth transfers they may receive. Consequently, the receipt of a given wealth transfer is less likely to lead to a revision of permanent income among older than younger households. If wealth effects drive our results we should find larger effects of wealth transfers on tenure choice among younger households than older households.

3.2 *Baseline Results*

Baseline estimates of the effect of any wealth transfers on tenure choice from a linear probability model are reported in Table 1, Panel A. In column (1) we include the initial values (at first observation) of our main controls only. In columns (2)–(4) we subsequently add the changes in our main controls during the observation period as well as the initial values and changes for our additional controls. This reduces the sample size somewhat for columns (3) and (4).

In Panel A, we find that the receipt of any wealth transfer significantly increases the propensity of a household to transition to ownership. Households that receive a wealth transfer of any size are 7%–9% points more likely to transition to ownership than households that receive no wealth transfer at all. The average effect of a wealth transfer is substantial, given that the mean propensity to transition in our sample is 23%.²³

In Panel B of Table 1, column (1), we split wealth transfers into buckets of different sizes. We see that households that receive wealth transfers below 10' CHF are no more likely to become homeowners than households that receive no wealth transfer at all. By contrast households that receive wealth transfers of between 10' and 25' CHF are between 5% and 6% points more likely to transition to homeownership. Receiving between 25' and 50' CHF is associated with a 13%–15% point increase in the likelihood of becoming a homeowner (almost 60% of the mean).

Overall, the point estimates presented in column (1) suggest that the propensity to become a homeowner increases monotonously with increasing sizes of wealth transfers. As discussed in Section 1, the positive correlation between the size of a received wealth transfer and changes in tenure choice may be driven by the fact that larger wealth transfers relax borrowing constraints more than smaller wealth transfers. Alternatively, however, large wealth transfers may lead to a revision of permanent income expectations and thus affect tenure choice through wealth effects.

3.3 *Accounting for Wealth Effects*

In this section we report on three tests that allow us to gauge whether wealth transfers affect tenure choice primarily by relaxing borrowing constraints or by triggering wealth effects, that is, a revision of permanent income.

Wealth transfers versus income changes. First insights on the role of borrowing constraints as opposed to wealth effects can be gained by comparing our estimates of wealth transfers to those of (changes in) wage income. The coefficients in Table 1 Panel B, columns (2) and (3) suggest that an increase in annual

23. Table A4 shows long-form tables of the regressions in Panel A (with all confounders included).

TABLE 1
WEALTH TRANSFERS AND HOME OWNERSHIP: BASELINE ESTIMATES

Panel A: Any wealth transfer					
Dependent variable:	<i>Home ownership</i>				
Sample:	Full sample of initial renters				
	(1)	(2)	(3)	(4)	(5)
Any wealth transfer	0.0875*** (0.0182)	0.0668*** (0.0172)	0.0776*** (0.0199)	0.0767*** (0.0201)	
Canton & year fixed effects	Yes	Yes	Yes	Yes	
Main controls: initial values	Yes	Yes	Yes	Yes	
Main controls: change in values	No	Yes	Yes	Yes	
Add. controls: initial values	No	No	Yes	Yes	
Add. controls: change in values	No	No	No	Yes	
<i>N</i>	2,615	2,615	2,179	2,179	
<i>R</i> ²	0.137	0.180	0.186	0.188	
Mean dependent variable	0.23	0.23	0.26	0.26	
Method	OLS	OLS	OLS	OLS	
Panel B: Wealth transfer in tranches					
Dependent variable:	<i>Home ownership</i>				
Sample:	Full sample of initial renters				
	(1)	(2)	(3)	(4)	(5)
Wealth transfer (1' to 10')	-0.007 (0.0197)	-0.015 (0.0194)	-0.013 (0.0241)	-0.016 (0.0192)	-0.015 (0.0240)
Wealth transfer (10' to 24')	0.058* (0.0291)	0.044 (0.0311)	0.065* (0.0334)	0.045 (0.0312)	0.066* (0.0333)
Wealth transfer (25' to 49')	0.145*** (0.0294)	0.123*** (0.0273)	0.122*** (0.0276)	0.125*** (0.0268)	0.125*** (0.0277)
Wealth transfer (50' to 99')	0.194*** (0.0311)	0.167*** (0.0301)	0.166*** (0.0360)	0.167*** (0.0303)	0.167*** (0.0363)
Wealth transfer (over 100')	0.244*** (0.0394)	0.206*** (0.0392)	0.224*** (0.0402)	0.208*** (0.0391)	0.226*** (0.0402)
Income (scaled by 10')	0.0066*** (0.00099)	0.0083*** (0.0015)	0.0094*** (0.0018)	0.0083*** (0.0018)	0.0102*** (0.0021)
Δ Income (scaled 10')		0.0039* (0.0015)	0.0033* (0.0017)		
Income rises by 10' CHF or more				0.015 (0.0213)	0.006 (0.0205)
Income falls by 10' CHF or more				-0.053 (0.0326)	-0.065* (0.0317)
Canton & year fixed effects	Yes	Yes	Yes	Yes	Yes
Main controls: initial values	Yes	Yes	Yes	Yes	Yes
Main controls: change in values	No	Yes	Yes	Yes	Yes
Add. controls: initial values	No	No	Yes	No	Yes
Add. controls: change in values	No	No	Yes	No	Yes
<i>N</i>	2,615	2,615	2,179	2,615	2,179
<i>R</i> ²	0.164	0.202	0.211	0.203	0.212
Mean dependent variable	0.23	0.23	0.26	0.23	0.26
Method	OLS	OLS	OLS	OLS	OLS

NOTES: This table presents linear probability model regressions on tenure status for the sample of households that are renters at first observation. The dependent variable is binary, taking the value of 1 for any household that transitions to Home Ownership while in the sample and 0 otherwise. Households that own when first observed are excluded from the analysis. Main control variables include: Wealthy parents, age, number of children, income, education, married, siblings, price/rent, intact home, repayment arrears, #observations. Additional control variables include: planning ability, political lean. Initial values of control variables are measured when the household is first observed in the survey. Changes in values of control variables are measured as the difference between the value at last observation minus first observation. Panel A shows the effect of receiving any wealth transfer while Panel B shows the effect of differently sized wealth transfers. See the Appendix for definitions. Standard errors are clustered at the cantonal level and reported in parentheses. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.010$

wage income of 10' CHF increases the propensity to transition to homeownership by between 0.3 and 0.4 percentage points. Note that on average, the households in this sample are 45 years old when first observed and 53 years old when they are last observed. Thus, a permanent increase in annual income of 10' CHF implies on average an increase in total (nondiscounted) lifetime income of at least 100' CHF (until retirement). Our Table 1, Panel B estimates show that the impact of a one-time wealth transfer of 10–25' CHF on homeownership is 20 times larger (column (3)) while a transfer of between 50' and 100' CHF (more comparable in total magnitude of wealth gained) is more than 50 times larger.

In columns (4) and (5) of Table 1, Panel B, we define dummy variables for changes in income. These denote whether wage income rises or falls by more than 10' CHF while the household is in the sample. These show that the effect of a positive increase is negligible while a decrease in wages lowers the likelihood that a household transitions to ownership. In both cases, however, the effects are dwarfed by one-time wealth transfers. We take this as first evidence that wealth transfers affect tenure choice through an alleviation of borrowing constraints rather than a revision of permanent income.²⁴

When comparing the effects of income to wealth transfers, it is worth discussing the concept that households may treat wealth derived from “windfall gains” differently than earned wealth. Imbens, Rubin, and Sacerdote (2001) document that households are somewhat more likely to consume housing out of lottery winnings. However, the authors also find that households significantly reduce their labor income in response to these winnings (referred to as the “marginal propensity to earn out of unearned income”).²⁵ We find no relationship between changes in household income and wealth transfers (regressions reported in Table A5). This could be viewed as indicative evidence that wealth transfers are not unanticipated lottery-like windfalls for the households in question.

High versus low expected permanent income. If wealth transfers impact on tenure choice primarily through wealth effects, then we should find that a wealth transfer of a given size has a stronger effect on households with *ex ante* lower expected permanent income. In Table 2, Panel A, we replicate our baseline results splitting households by indicators of expected permanent income. In column (1) households with high permanent income are identified as households in which the primary respondents have enjoyed above average education. In column (2) we classify households with above average education and at least one wealthy parent as high permanent income

24. It is of course possible that income changes were anticipated and therefore should produce no reaction in house-buying behavior. This is more likely for smaller deviations, but cannot be ruled out for larger deviations of income. Ultimately, a household that can predict changes in income well may also predict transfers to a certain degree. Perfectly predicted transfers and income changes will induce no wealth effect, though the transfer may alleviate borrowing constraints, which may be what is reflected in the results above.

25. The authors find a marginal propensity to consume housing of 3.7% and a marginal propensity substitute earnings with winnings of 11%.

TABLE 2
SUBSAMPLE ANALYSES

Panel A: Households with high versus low permanent income				
Dependent variable:	<i>Home ownership</i>			
Sample:	High education	High education & High parental wealth	Low education	Low education & no parental wealth
	(1)	(2)	(3)	(4)
Wealth transfer (1' to 10')	-0.0477 (0.0349)	-0.0821* (0.0454)	0.00617 (0.0242)	-0.00865 (0.0230)
Wealth transfer (10' to 24')	0.0114 (0.0347)	-0.0340 (0.0529)	0.0677 (0.0421)	0.0909* (0.0509)
Wealth transfer (25' to 49')	0.0966* (0.0493)	0.0806 (0.0788)	0.143*** (0.0368)	0.130*** (0.0436)
Wealth transfer (50' to 99')	0.192*** (0.0479)	0.199** (0.0874)	0.127*** (0.0290)	0.132*** (0.0451)
Wealth transfer (over 100')	0.194*** (0.0543)	0.132** (0.0630)	0.217*** (0.0773)	0.226*** (0.0764)
Income (scaled by 10')	0.0073*** (0.0023)	0.0084** (0.004)	0.009*** (0.0016)	0.0094*** (0.0029)
Δ Income (scaled 10')	0.0016 (0.0028)	0.0009 (0.0032)	0.0052** (0.0016)	0.0057** (0.0022)
Canton & year of entry fixed effects	Yes	Yes	Yes	Yes
Main controls: initial values	Yes	Yes	Yes	Yes
Main controls: change in values	Yes	Yes	Yes	Yes
Add. controls: initial values	No	No	No	No
Add. controls: change in values	No	No	No	No
N	1,040	510	1,575	1159
R ²	0.232	0.279	0.196	0.211
Mean dependent variable	0.30	0.33	0.19	0.16
Method	OLS	OLS	OLS	OLS

Panel B: Analysis split by age of primary respondent				
Dependent variable:	<i>Home ownership</i>			
Sample: Respondent age at initial observation	Full sample	under 35	35-50	over 50
	(1)	(1)	(2)	(3)
Wealth transfer	0.0668*** (0.0172)	0.0680* (0.0347)	0.0652*** (0.0177)	0.0644** (0.0253)
Canton & year of entry fixed effects	Yes	Yes	Yes	Yes
Main controls: initial values	Yes	Yes	Yes	Yes
Main controls: change in values	Yes	Yes	Yes	Yes
Add. controls: initial values	No	No	No	No
Add. controls: change in values	No	No	No	No
N	2,615	870	868	877
R ²	0.18	0.253	0.159	0.121
Mean dependent variable	0.23	0.33	0.25	0.11
Method	OLS	OLS	OLS	OLS

NOTES: This table presents subsample analyses. Panel A shows variants of the baseline regression for subsamples of households likely to experience high permanent income (high education & wealthy parents) in columns (1) and (2). Columns (3) and (4) make use of subsamples in which respondents show lower than average schooling and report no wealthy parents. Panel B subsamples the baseline regression by the age of the respondents at first observation. Regressions make use of the same controls as Table 1. See the Appendix for variable definitions. Standard errors are clustered at the cantonal level and reported in parentheses. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.010$

households. Columns (3) and (4) make use of the reciprocal subsamples to capture households with low permanent income.

Households with high permanent income are likely to (i) expect some transfer or (ii) view medium size transfers as less significant compared to their overall permanent income. We argue, therefore, that we most clearly identify the effects of borrowing constraints among these households. Table 2, Panel A results show that medium size transfers strongly impact on tenure choice of high permanent income households. Transfers between 50' and 100' CHF have, arguably, the largest effect on the propensity of high permanent income households to transition (with nearly 20% points). This represents over 60% of the mean. The fact that, in relative terms, these estimates match those of Table 1, Panel B lends credence to our results.

Among households with lower permanent income, wealth transfers also strongly affect the propensity to transition to ownership. Considering transfers between 50' and 100' CHF, as above, we observe smaller coefficient estimates. However, the effects are similar, when benchmarked against the unconditional mean of the subsample. For larger wealth transfers (above 100' CHF) we observe larger effects for households with lower permanent income than for households with high permanent income. It is possible that this reflects a wealth effect for low permanent income households.

Young versus old households. Older households are likely to have more accurate expectations of the size of expected wealth transfers. If this is the case, they are less likely to revise their permanent income when they do receive a wealth transfer. Thus if the effect of wealth transfers on tenure choice is driven primarily by revisions of permanent income we should observe stronger effects among younger households than older households. In Panel B of Table 2, we replicate our baseline estimates splitting households by age at first observation. Comparing our estimates by respondent age-group, we see that the absolute magnitude of the effect is similar across age groups. Relative to the sample mean, however, the effects are largest among older households. In the sample of households that are younger than 35 at first observation a wealth transfer increases the propensity to transition to ownership by 7 percentage points (21% of the mean for this subsample). By comparison, in the subsample of households who are older than 50, the estimated effect of a wealth transfer is 6 percentage points (though this is over 50% percent of the subsample mean). The finding that the effect is possibly larger among older cohorts supports our conjecture that this effect is not driven largely by wealth effects.

3.4 Robustness Tests

In the Appendix we present several robustness tests to our main results. In Table A6 we replicate our full-sample estimates using alternative estimation methods. The magnitude and significance of our point estimates for *Wealth Transfer* are confirmed by a probit regression (Panel A) as well as by a matching analysis (Panel B).

In Table A7 we report the results of a survival analysis which relates annual wealth transfers to subsequent changes in tenure status. In this analysis we again use the

receipt of a wealth transfer as our treatment variable. Our “time dimension” is time in the sample (in years). The benefit of Cox-hazard rate models is that they allow for a right censoring of the data. It could be the case, after all, that a household receives wealth toward the end of our sample only to relocate once we no longer observe it. The findings corroborate our between-effects analyses; our full-sample estimates suggest that once a household receives wealth, it is 1.4 times as likely to transition to ownership in the following years.

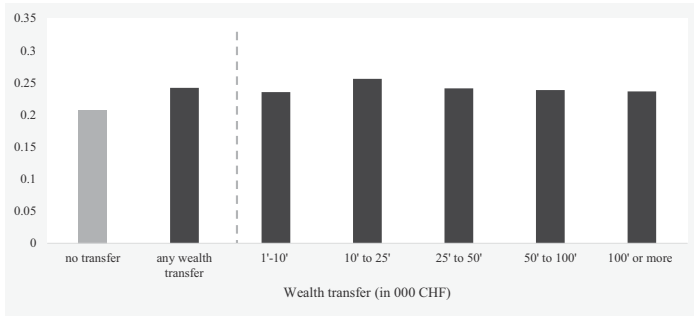
In Table A8 we follow the approach of Andersen and Meisner Nielsen (2011) and use intra-family deaths as an instrument for the exogenous receipt of wealth transfers. This strategy allows us to better account for the potential endogeneity of wealth transfers to unobserved life-cycle events that may change preferences for housing and homeownership. In contrast to Andersen and Meisner Nielsen (2011) our aim is to instrument the exogenous timing of an anticipated inheritances rather than potential wealth effects of unanticipated inheritances. We instrument the timing of a wealth transfer W_i with survey information about the timing of death of relatives of the responding household respondent. In each year, each household is asked whether a close relative has died. For a household that we observe for the first time in year t_i and last time in year T_i we define *FamilyDeath* = 1 if a close relative died in any year between t_i and T_i . In our sample of initial renters the unconditional correlation of *FamilyDeath* and *WealthTransfer* is 0.28 and highly significant.

The IV results presented in Table A8 Panel B column (2) show that a household’s propensity to become a homeowner, given an instrumented receipt of wealth, increases by 33 % points. The coefficient is considerably larger than our baseline estimates. It is worth reflecting here that the IV-specification estimates a local average treatment effect (LATE) for the sub-population of possible compliers (i.e., those households likely to receive wealth upon the death of a relative). These households are likely to have high permanent income but will not yet have received (a significant) predeath bequest. As a consequence, these households may be awaiting a transfer in order to transition. Our IV results lend further credence to our baseline results. Exogenously timed transfers, among a cohort of high permanent income households, are associated with a significant increase in the propensity to transition to ownership.

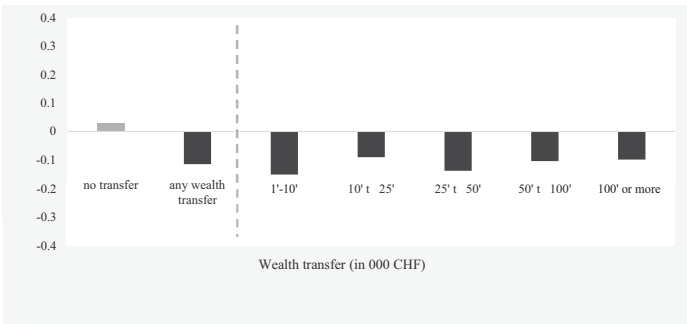
4. WEALTH TRANSFERS AND “TRADING UP”

In this section we study the relationship between wealth transfers and changes in housing choice for the sample of 2,343 initial homeowners. Specifically, we examine whether a household moves, changes house size, or location quality in response to the receipt of a wealth transfer. Figure 4 displays the propensity of a household to move (Panel A), changes in the number of rooms of the dwelling (Panel B), and changes in the perceived quality of the location (Panel C). We again separate the sample by whether respondents receive certain amounts of wealth or not. The figure shows no effect of wealth transfers.

Panel A: Share of initial owners who move by size of wealth transfer



Panel B: Change in the number of rooms of initial owners (first vs. last observation)



Panel C: Change in satisfaction with neighbourhood of initial owners (first vs. last observation)

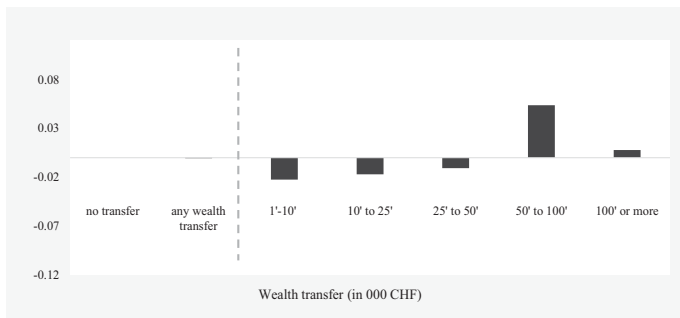


FIG. 4. Wealth Transfers and Trading Up.

Panel A: Share of initial owners who move by size of wealth transfer. Panel B: Change in the number of rooms of initial owners (first versus last observation). Panel C: Change in satisfaction with neighborhood of initial owners (first versus last observation).

NOTES: For the sample of initial owners, this figure shows the relationship between receiving a wealth transfer of different sizes and a household's propensity to move (Panel A), the change in the number of reported rooms (Panel B), and the change in reported neighborhood satisfaction (Panel C). Numbers above the bar chart indicate sample size. We separate households by age at first observation. $N = 2,343$

The identification challenges in this analysis are identical to those discussed in our analysis of tenure status. First, we have to rule out selection effects. Households that receive wealth transfers may have different preferences for housing and different expected levels of permanent income compared to households that do not receive wealth transfers. Moreover, the receipt of a wealth transfer during our observation period is possibly correlated with changes in preferences for housing due to life-cycle events. Second, if we do find an effect of wealth transfers on housing choice we have to disentangle the relaxation of borrowing constraints from potential wealth effects due to an updating of permanent income expectations.

Our empirical approach mirrors that of Section 3. To account for potential selection effects our main identification strategy is to match households on an extensive set of socioeconomic characteristics. As in Section 3, we control for differences in preferences, expected permanent income, and house prices (at first observation) as well as for changes in these variables during the observation period.

We find no evidence for an effect of wealth transfers on the housing choice of households that already own a home. Table 3, Panel A results shows that the receipt of any wealth transfer slightly increases the propensity to move (columns 1). This result disappears, however, once we include additional controls. Wealth transfers also have no sizeable or significant effect on the change in the number of rooms of the dwelling (columns 3–4) or the change in neighborhood satisfaction (columns 5–6). In Panel B, we confirm that there is no effect for any category of wealth transfer. Income, on the other hand, does seem to correlate with house size. Families, which experience increasing income, seem to “move up”.

The nonresults reported in Table 3 are unlikely to be driven by measurement error. It is true that our survey measures of housing quantity ($\Delta HouseSize$) and housing quality ($\Delta LocationQuality$) are less precise than our measure of tenure status in Section 3. However, our dependent variable *MoveHouse* that is also reported in Table 3 is arguably measured precisely. If wealth transfers did lead a significant share of existing homeowners to trade-up we should observe a significant effect on the propensity of existing homeowners to move location.

Our finding that wealth transfers are not associated with trading up of existing homeowners is novel and stands in contrast to existing literature for the United States (Engelhardt and Mayer 1998) and Italy (Guiso and Jappelli 2002). As suggested by our theoretical model, households that prefer to own, rather than rent a house, can react in two different ways to borrowing constraints. On the one hand, they can initially buy a “suboptimal” house and then trade up. On the other hand they can initially rent a house and later transition to homeownership. In our model we assumed that households can freely choose between renting and owning any property. Thus the decision to initially rent or own is driven by preferences for home ownership. In reality, however, the decision to rent or buy will also be influenced by the development of the rental market for residential properties.

In Switzerland, the residential market is characterized by a wide variety of available rental properties. This implies that households, which cannot buy high-quality homes due to borrowing constraints, could well be able to rent the same type of property. We

TABLE 3
WEALTH TRANSFERS AND TRADING UP: BASELINE RESULTS

Panel A: any wealth transfer

Sample:	All initial owners		All initial owners		All initial owners	
	Move house		Δ House size		Δ Location quality	
	(1)	(2)	(3)	(4)	(5)	(6)
Wealth transfer	0.0313** (0.0150)	0.0288 (0.0187)	-0.0793* (0.0461)	-0.0602 (0.0427)	-0.0140 (0.0543)	-0.00981 (0.0568)
Canton and Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Main controls: initial values	Yes	Yes	Yes	Yes	Yes	Yes
Main controls: change in values	Yes	Yes	Yes	Yes	Yes	Yes
Add. controls: initial values	No	Yes	No	Yes	No	Yes
Add. controls: change in values	No	Yes	No	Yes	No	Yes
<i>N</i>	2,343	2,030	2,343	2,030	2,343	2,030
<i>R</i> ²	0.103	0.112	0.054	0.057	0.028	0.039
Mean dependent variable	0.23	0.24	-0.1	-0.1	0.00	-0.01
Method	OLS	OLS	OLS	OLS	OLS	OLS

Panel B: Wealth transfer in tranches

Sample:	All initial owners		All initial owners		All initial owners	
	Move house		Δ House size		Δ Location quality	
	(1)	(2)	(3)	(4)	(5)	(6)
Wealth transfer (1' to 10' CHF)	0.0274 (0.0252)	0.0285 (0.0264)	-0.123* (0.0718)	-0.120* (0.0611)	-0.0390 (0.0744)	-0.0364 (0.0694)
Wealth transfer (10' to 24' CHF)	0.0477 (0.0314)	0.0439 (0.0372)	-0.0626 (0.0778)	-0.0365 (0.0891)	-0.0201 (0.0635)	-0.0154 (0.0727)
Wealth transfer (25' to 49' CHF)	0.0310 (0.0231)	0.0269 (0.0255)	-0.117** (0.0522)	-0.0793 (0.0527)	-0.0227 (0.0569)	-0.000595 (0.0602)
Wealth transfer (50' to 99' CHF)	0.0163 (0.0262)	0.00491 (0.0262)	-0.0214 (0.0692)	-0.0242 (0.0763)	0.0401 (0.0664)	0.0243 (0.0765)
Wealth transfer (over 100' CHF)	0.0214 (0.0234)	0.0247 (0.0274)	-0.0537 (0.0926)	-0.0243 (0.0862)	-0.00240 (0.0521)	0.00127 (0.0536)
Income (scaled by 10')	0.0001 (0.002)	0.0004 (0.002)	0.011*** (0.0037)	0.011*** (0.0038)	0.001 (0.002)	-0.00083 (0.002)
Δ Income (scaled 10')	-0.0005 (0.001)	-0.0006 (0.001)	0.014*** (0.0048)	0.016*** (0.0045)	0.002 (0.002)	0.0006 (0.002)
Canton and year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Main controls: initial values	Yes	Yes	Yes	Yes	Yes	Yes
Main controls: change in values	Yes	Yes	Yes	Yes	Yes	Yes
Add. controls: initial values	No	Yes	No	Yes	No	Yes
Add. controls: change in values	No	Yes	No	Yes	No	Yes
<i>N</i>	2,343	2,030	2,343	2,030	2,343	2,030
<i>R</i> ²	0.103	0.112	0.055	0.058	0.028	0.039
Mean dependent variable	0.23	0.24	-0.1	-0.1	0.00	-0.01
Method	OLS	OLS	OLS	OLS	OLS	OLS

NOTES: This table depicts the propensity of a household to move (columns (1) and (2)), the change in the house size (columns (3) and (4)) and the change in the quality of a household's location (columns (5) and (6)). Move House is a binary variable, taking a value of 1 if the household moves home while in the sample. Δ House Size measures the change in the number of reported rooms of a household's dwelling. Neighborhood satisfaction is measured on a scale of 0–3, based on complaints; from this we compute Δ Location Quality, which measures the change in reported neighborhood satisfaction. We focus only on initial owners. Standard errors are clustered at the cantonal level and reported in parentheses. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.010$

conjecture that the well-developed rental market may explain why wealth transfers are associated with transitions to ownership but not with trading up of homeowners in our sample: Borrowing constrained households who cannot buy their preferred home are more likely to rent that home rather than buy a suboptimal one. In other countries, with higher home ownership rates and less comprehensive rental markets, certain types of properties in good regions may only be available to households who buy.

5. CONCLUSION

In this paper, we analyze the effects of borrowing constraints on tenure status and housing choice by comparing households that receive wealth transfers to those that do not. Our analysis is based on household-level panel data from Switzerland that includes detailed information on the socioeconomic background of households, including the economic status of parents.

We document a substantial effect of wealth transfers on the propensity of households to become homeowners. Our full sample results suggest that a wealth transfer increases the propensity of a household to transition to ownership by between 7% and 9% points. Larger transfers of between 50' and 100' CHF increase this propensity by up to 17% points. We show that this is unlikely to be a wealth effect or inflated due to the possible endogeneity in the timing of the arrival of wealth transfers. We find that wealth transfers impact much more strongly on homeownership than similar income increases. We show that the effect of transfers is similar across households with high and low permanent income. Moreover, we find that the impact of a wealth transfer is similar for older and younger households. Older households arguably have more precise estimates of anticipated wealth transfers than younger households. Finally our results are confirmed by an IV that instruments the timing of the arrival of wealth transfers.

We find no evidence at all that wealth transfers induce existing homeowners to trade up in the property market. That is, homeowners that receive a wealth transfer are not more likely to move to larger homes in more preferred locations. This finding is novel and is consistent with the observation that the rental market for residential properties of high quality is well developed in Switzerland. In such a market, borrowing constrained households can rent their preferred home (and later transition to ownership) rather than buy a less preferred home (and later trade up).

Our findings point to potential side-effects of recent macroprudential regulations, designed to ensure the stability of the financial sector. Increased LTV-thresholds and limits on the types of equity that can be used to make down payments (e.g., limits on the use of pension savings) do not impact all households in the same way. Households without access to intergenerational wealth transfers will be disproportionately affected by the tightening of leverage constraints in the mortgage market. Thus, while arguably promoting financial stability, macroprudential regulation of the mortgage market may undermine public policy to foster homeownership—among younger and economically disadvantaged households. Given the various benefits believed to be

associated with home ownership (HUD 1995, Boehm and Schlotmann 1999, Ioannides, Yannis, and Zabel 2003, Campbell, Giglio and Pathak 2011) this trade-off deserves attention.

APPENDIX



Fig. A1. Timing of Wealth Transfers and transition to Home Ownership.

NOTES: For the sample of initial renters who transition to ownership and receive a wealth transfer, this image depicts when a household transitions to ownership in relation to when it receives wealth. The x axis indicates the number of years between receipt of wealth and transition to ownership. <0: wealth received before transition to ownership; >0: wealth received after transition.

TABLE A1
DATA STRUCTURE BY YEAR OF ENTRY

Year of entry into the sample	Number of observations									
	3	4	5	6	7	8	9	10	11	Total
2002	208	172	190	179	213	111	188	275	1,271	2,807
2003	8	8	10	10	7	10	16	38		107
2004	2	6	124	153	141	180	774			1,380
2005	5	6	15	15	21	63				125
2006	5	1	8	14	49					77
2007	18	39	31	188						276
2008	4	1	77							82
2009	11	80								91
2010	13									13
Total	274	313	455	559	431	364	978	313	1,271	4,958

NOTES: This table showcases the structure of our data. It shows the number of households that are observed for X number of years, based on their year of entry into the sample. We restrict our analysis to households that are observed for at least 3 years.

TABLE A2
SUMMARY STATISTICS

Panel A: Initial renters

Variable name	mean	sd	p50	N	Household receives (any) wealth transfer:		
					No (N = 1,000)	Yes (N = 1,615)	Difference
<i>Dependent variable:</i>							
Home ownership	0.23	0.42	0	2,615	0.16	0.27	-0.11***
<i>Explanatory variables:</i>							
Wealth transfer	0.38	0.49	0	2,615	-	-	-
Family death	0.84	0.37	1	2,615	0.79	0.87	-0.08***
<i>Household and regional controls (first observation):</i>							
Wealthy parents	0.35	0.48	0	2,615	0.28	0.40	-0.12***
Number of respondent/spouse siblings	0.90	0.30	1	2,615	0.89	0.91	-0.02
Age	45.2	15.8	42.0	2,615	47.11	43.97	3.14***
Income	83,239	66,894	77,651	2,615	80,268	85,079	-4,811
Children	0.29	0.45	0	2,615	0.25	0.31	-0.06**
Education (years)	13.66	3.22	12	2,615	12.98	14.08	-1.11***
Married	0.54	0.50	1	2,615	0.54	0.55	-0.01
Price/Rent	34	3	35	2,615	34.33	34.44	-0.11
Intact home during respondent childhood	0.9	0.3	1.0	2,615	0.84	0.88	-0.03*
Repayment arrears	0	0	0	2,615	0.10	0.13	-0.03*
<i>Household and regional controls (changes during sample):</i>							
Δ Income	8,437	67,964	816	2,615	4,339	10,974	-6,635*
Children	0.2	0.4	0	2,615	0.13	0.19	-0.1***
Decrease in children	0.16	0.37	0	2,615	0.13	0.19	-0.1***
New marriage	0.17	0.37	0	2,615	0.13	0.19	-0.1***
Divorce	0.14	0.34	0	2,615	0.10	0.16	-0.1***
Δ Price/Rent	3.33	3.01	2	2,615	3.40	3.29	0.11
# Observations	7.9	2.5	8.0	2,615	7.07	8.39	-1.33*
<i>Additional controls:</i>							
Planning ability	3.8	2.5	4.0	2,179	4.17	3.67	0.50**
Political lean	4.5	1.9	5.0	2,179	4.48	4.52	-0.04
Δ Planning ability	0.22	1.5	0	2,179	0.23	0.21	0.03
Δ Political lean	0.16	1.7	0	2,179	0.13	0.18	-0.05

Panel B: Initial owners

Variable name	mean	sd	p50	N	Household receives (any) wealth transfer:		
					No (N = 649)	Yes (N = 1,694)	Difference
<i>Dependent variable:</i>							
Household moves	0.2	0.4	0.0	2,343	0.21	0.24	-0.03
Change in number of rooms	-0.1	1.1	0.0	2,343	0.03	-0.12	0.14

(Continued)

TABLE A2

CONTINUED

Panel B: Initial owners

Variable name	mean	sd	p50	N	Household receives (any) wealth transfer:		
					No (N = 649)	Yes (N = 1,694)	Difference
Change in satisfaction	0.0	0.7	0.0	2,343	0.00	0.00	0.00
<i>Explanatory variables:</i>							
Wealth transfer	0.54	0.50	1	2,343	–	–	–
Family death	0.88	0.33	1	2,343	0.82	0.90	–0.08***
<i>Household and regional controls (first observation):</i>							
Wealthy parents	0.51	0.50	1	2,343	0.40	0.56	–0.16***
Number of respondent/spouse siblings	0.94	0.25	1	2,343	0.92	0.94	–0.02
Age	51.9	13.3	51.0	2,343	51.53	52.09	–0.56
Income	105,057	98,351	100,659	2,343	95,529	108,708	–13,179**
Number of children	0.39	0.49	0	2,343	0.40	0.38	0.02
Education (years)	13.83	3.32	12	2,343	12.99	14.14	–1.15***
Married	0.80	0.40	1	2,343	0.79	0.81	–0.02
Price/Rent	34	3	34	2,343	33.80	33.89	–0.09
Intact home during respondent childhood	1	0	1	2,343	0.92	0.93	–0.01
Repayment arrears	0	0	0	2,343	0.07	0.05	0.02
<i>Household and regional controls (changes during sample):</i>							
Δ Income	–12,557	88,319	–119	2,343	–2,685	–16,340	13,655***
Increase in children	0.1	0.2	0	2,343	0.07	0.06	0.0
Decrease in children	0.27	0.44	0	2,343	0.25	0.28	0.0
New marriage	0.07	0.26	0	2,343	0.05	0.08	–0.03*
Divorce	0.14	0.35	0	2,343	0.11	0.16	–0.05**
Δ Price/Rent	2.60	3.01	2	2,343	2.80	2.52	0.28*
# Observations	8.1	2.6	9.0	2,343	6.88	8.54	–1.66**
<i>Additional Controls:</i>							
Planning ability	3.9	2.4	4.0	2,030	4.05	3.89	0.15
Political lean	4.9	1.8	5.0	2,030	4.86	4.96	–0.11
Δ Planning ability	0.19	1.3	0	2,030	0.35	0.14	0.21**
Δ Political lean	0.14	1.7	0	2,030	0.22	0.12	0.10

NOTES: This table shows summary statistics for all variables used in our empirical analysis. Panel A focuses on initial renters. Panel B shows initial owners. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.010$.

TABLE A3
DEFINITION OF VARIABLES

Variable name	Definition
<i>Dependent variables:</i>	
Home ownership	A binary variable that takes the value of 1 if a household transitions to ownership while in the sample.
Move house	A binary variable that takes the value of 1 if a household moves while in the sample.
Δ Location quality	A variable that compares a household's satisfaction with the neighborhood at the outset and end of the sample period (satisfaction is scaled from 0 to 3 and measures satisfaction with noise, pollution, and vandalism in an area).
Δ House size	A variable that compares the number of rooms (reported by the household) at the outset and end of the sample period.
<i>Explanatory variables:</i>	
Wealth transfer	Binary variable denoting whether the household received a wealth transfer in excess of the indicated amount in '000 CHF during time in the survey. Sources of wealth are family members not living in the household (bequests, inheritances, etc.).
Family death	This variable (binary) denotes whether the household reported that a "close relative" of the family has passed away while in the sample.
<i>Household and regional controls (first observation):</i>	
Wealthy parents	Binary variable denoting whether a household has at least one parent that can be classified as "wealthy" based on the occupation held while the respondent was 15 years of age. Occupations considered: self-employed with employees, partner, or executive in a firm.
Number of respondent/spouse siblings	Respondent(s) had siblings while growing up. The variable is binary and takes on a value of 1 if either HH-head (in cases of married household) says yes.
Age	Age of primary respondent when first observed in the sample. For most regressions this is represented in dummies for primary respondents that are below 35, between 35 and 50, and above 50. These are roughly equally sized groups.
Income	Household's reported labor income at entry into sample. Around 600 households report 0 labor income. These households are recorded as such and not dropped. Dropping them does not change the magnitude of our coefficients in our baseline regressions reported above.
Children	Number of children the household reported at first observation. Whether the household has children (depending on specification).
Education (years)	Years of primary respondent education.
Married	Household comprises two or more people as a civil-union unit reported as: married or living with partner, when first observed.
Price/Rent	Price to rent ratio in the MS region into which a household transitions. For non-transitioning households MS-region of residence is applied. Baseline year is 2003 given data-availability.
Intact home during respondent childhood	The respondent (at least one respondent in a two respondent household) lived with both mother and father when aged 15. Household considered "intact" if both parents present
Repayment arrears	Binary variable denoting whether a household has reported being behind on payments "frequently" at least once during its time in the survey.
<i>Household and regional controls (changes during sample):</i>	
Δ Income	Increase or decrease in household income during time in sample expressed in 10,000 CHF. In some specifications, this information is represented in two dummy variables, denoting whether income increases (decreases) by 10,000 CHF or more while the household is in the sample.
Increase in children	Growth in the number of children (positive) while in the sample. This variable is binary, taking on the value of 1 if the number of children increased.

(Continued)

TABLE A3

CONTINUED

Variable name	Definition
Decrease in children	Decrease in the number of children (positive) while in the sample. This variable is binary, taking on the value of 1 if the number of children fell.
New marriage	Household goes from an individual unit to a married /civil-union unit during time in survey.
Divorce	Household undergoes a split from a single unit during time in survey. Note: this variable includes: divorced, separated, or widowed
Δ Price/Rent	Increase in price to rent ratio over household's time in survey.
# Observations	The number of times a household is observed in the data.
<i>Additional controls:</i>	
Planning ability	Respondent (one or more respondents in a two person household) above median [5] on a self-reported scale pertaining to "perceived ability to make plans".
Political lean	Respondent (one or more respondents in a two person household) reports right leaning stance as pertains to the political spectrum (above 5 on a self-reported scale of 1–10).
Δ Planning ability	Change in the household's perceived ability to make plans.
Δ Political lean	Change in a household political lean over time.

NOTES: The following is a basic overview of the variables used in this analysis. Variables are generated from self-reported survey-data. Some characteristics are observed only once (questions pertaining to respondent's youth) while others are observed each year. Information on preference variables is not as universally available; regressions that include preference variables (such as political preference or preference for planning) are performed on a slightly smaller subset of the available data.

TABLE A4

WEALTH TRANSFERS AND HOME OWNERSHIP (OLS) - LONGFORM OF TABLE 1

Sample:	Full Sample	
	(1)	(2)
Wealth transfer	0.0668*** (0.0172)	0.0767*** (0.0201)
Siblings	-0.0170 (0.0280)	-0.00568 (0.0309)
Wealthy parents	0.00828 (0.0242)	-0.000414 (0.0251)
Respondent under 35	0.0571* (0.0281)	0.0647** (0.0276)
Respondent between 35 and 50	0.0109 (0.0136)	0.0185 (0.0124)
Income (scaled 10.000)	0.0092*** (0.0016)	0.011*** (0.0019)

(Continued)

TABLE A4

CONTINUED

Sample:	Full Sample	
	(1)	(2)
Children	0.0691*** (0.0209)	0.0892*** (0.0244)
Education (years)	0.000833 (0.00221)	0.00182 (0.00275)
Married	0.0663*** (0.0237)	0.0744*** (0.0247)
Price/Rent	-0.0145*** (0.00393)	-0.0159*** (0.00381)
Intact Home	0.0144 (0.0254)	0.0215 (0.0282)
Repayment Arrears	-0.0949*** (0.0287)	-0.114*** (0.0317)
Change income (scaled 10.000)	0.004** (0.002)	0.003* (0.0018)
Increase in children	0.153*** (0.0253)	0.139*** (0.0299)
Decrease in children	-0.0178 (0.0269)	-0.0395 (0.0282)
New marriage	0.0910*** (0.0255)	0.109*** (0.0190)
Divorce	-0.0912*** (0.0283)	-0.106*** (0.0315)
Δ Price/Rent	-0.0137* (0.00729)	-0.0139* (0.00723)
# Observations	0.0197*** (0.00251)	0.00454 (0.00447)
Planning ability		-0.00214 (0.00563)
Political lean		0.0159*** (0.00458)
Δ Planning ability		0.0111 (0.00686)
Δ Political lean		-0.00868 (0.00703)
Constant	0.400** (0.145)	0.486*** (0.154)
Canton and year fixed effects	Yes	Yes
<i>N</i>	2,615	2,179
<i>R</i> ²	0.180	0.188

NOTES: This table presents the regression shown in Table 1 Panel A showing all variables. Only columns (2) and (4) from Table 1 are shown for brevity. The dependent variable is binary, taking the value of 1 for any household that transitions. Households that own when first observed are excluded from the analysis. Standard errors are clustered at the cantonal level and reported in parentheses. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.010$

TABLE A5
WEALTH TRANSFERS AND CHANGES IN INCOME

Dependent variable: Change income	(1)	(2)
Wealth transfer	-0.0165 (0.0254)	
Wealth transfer (1' to 10')		-0.0178 (0.0350)
Wealth transfer (10' to 24')		-0.0299 (0.0283)
Wealth transfer (25' to 49')		-0.00827 (0.0312)
Wealth transfer (50' to 99')		-0.0450 (0.0397)
Wealth transfer (over 100')		0.0337 (0.0703)
<i>N</i>	2,615	2,615
Canton and year fixed effects	Yes	Yes
Main controls: initial values	Yes	Yes
Main controls: change in values	Yes	Yes
Add. controls: initial values	No	No
Add. controls: change in values	No	No
Method	OLS	OLS

NOTES: This table depicts the propensity of a household to change its labor income following a receipt of wealth. Wealth transfers are defined as binary variables taking a value of 1 if the household receives a transfer of a particular size while in the sample. Change in income is continuous, defined as the change in labor income while a household is in the sample. Standard errors are clustered at the cantonal level and are reported in parentheses. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.010$

TABLE A6
WEALTH TRANSFERS AND HOME OWNERSHIP: ALTERNATIVE ESTIMATION METHODS

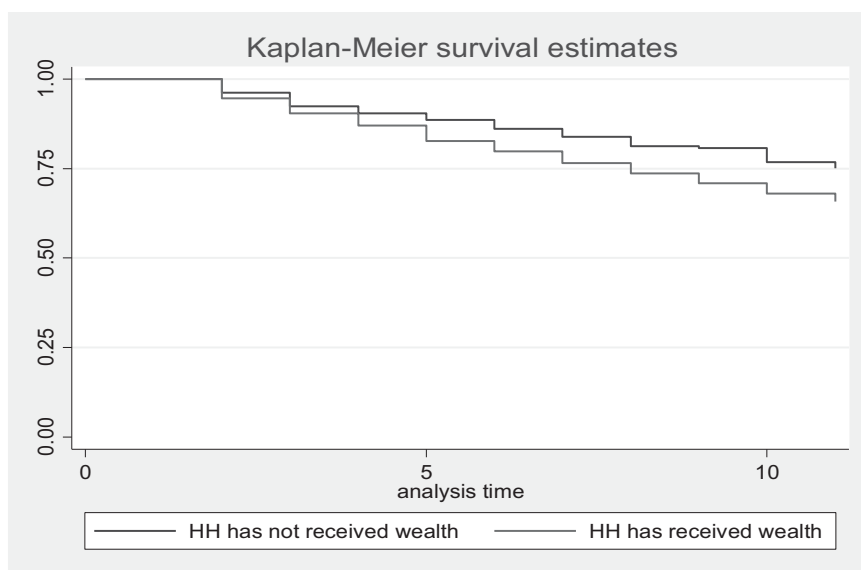
Panel A: Probit analysis	(1)	(2)
Wealth transfer	0.096*** [0.353***] (0.0694)	0.073*** [0.274***] (0.0719)
<i>N</i>	2,604	2,602
Canton and Year fixed effects	Yes	Yes
Main controls: initial values	Yes	Yes
Main controls: change in values	No	Yes
Add. controls: initial values	No	No
Add. controls: change in values	No	No
Method	Probit	Probit
Panel B: Matching analysis	(1)	(2)
Wealth transfer	0.11*** (0.016)	0.11*** (0.013)
<i>N</i>	2,612	2,612
Canton and Year fixed effects	Yes	Yes
Main controls: initial values	Yes	Yes
Main controls: change in values	No	Yes
Add. controls: initial values	No	No
Add. controls: change in values	No	No
Method	Radius matching	Radius matching

NOTES: This table depicts the propensity of a household to transition to ownership upon receiving any wealth. We make use of a probit as opposed to a linear probability model in Panel A and radius matching in Panel B. Marginal effects for the coefficients of interest are reported prominently while coefficient estimates are shown in square brackets in Panel A. The dependent variable is binary, taking the value of 1 for any household that transitions. Households that own when first observed are excluded from the analysis. Standard errors are reported in parentheses. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.010$

TABLE A7
COX HAZARD RATE ESTIMATION

Panel A - Survival analysis	(1)	(2)
Wealth transfer	1.402*** (0.135)	1.384*** (0.133)
N	2,615	2,179
Main controls: initial values	Yes	Yes
Main controls: change in values	Yes	Yes
Add. controls: initial values	No	Yes
Add. controls: change in values	No	Yes
Method	Survival analysis	Survival analysis

Panel B - Survival graph



NOTES: This table (Panel A) depicts the propensity of a household to transition to ownership in the context of a hazard-rate analysis. The event in question is the transition to ownership while time represents the time a household spends in the sample or time until transition to ownership. Receiving wealth is defined as receiving any wealth, not receiving wealth is defined as receiving no wealth. We use the same controls as described above. We report hazard rates. Standard errors are reported in parentheses. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.010$ Panel B shows the survival rates for the households who receive versus those that do not receive wealth.

TABLE A8

WEALTH TRANSFERS AND HOME OWNERSHIP: IV

Panel A: IV Regression

To use family death as an instrument, we must ensure two conditions are met. First, we must rule out any significant direct effect of family death on the propensity of renters to transition to homeownership, except through a wealth transfer. Second, we must also establish that the effect of the financial wealth transfer on homeownership, which is triggered by the death of a relative, is only driven by a relaxation of borrowing constraints—and not to an unexpected change in permanent income.

A direct effect of the death of a close relative on transition to ownership could be triggered either by frictions in the housing market in the case where a household receives a house as an inheritance or by a change in household preferences. First, we are able to account for households that receive a house. Second, while the death of a close relative could possibly constitute a life-cycle event which triggers changes in preferences for housing, our data suggest that the exclusion restriction is not compromised. In a regression that includes our control variables and our explanatory variables for different sizes of wealth transfers we find no evidence that Family Death increases the propensity with which a household transitions to ownership (see Panel C). In order to mitigate the above concerns, we therefore include our vector of household-level control variables X in our instrumental variable estimation.

Endogenous treatment “wealth transfer” is binary and takes on the value of 1 if a transfer is received, and zero otherwise. Since we only have a single binary instrument, we can only make use of a single treatment variable. Moreover, since our endogenous treatment variable is binary, we estimate the IV-model employing a “zero-stage” regression prior to the ordinary two stage least square regressions. Prior estimation of instruments has grown in popularity in recent years; see Dahl and Lochner (2012), Nichols (2007), or Egger and Pfaffermayr (2003) for examples or discussions of this. In this paper, we follow procedures outlined by Wooldridge (2002), who suggests that preestimation of binary instruments improves efficiency and precision of the 2SLS estimators. Our methodology: we use a probit regression to estimate the propensity of a household to receive wealth, using our excluded instruments (family death) and included instruments (our controls) as regressors. We predict the probability of receiving wealth for each household in our sample (using the specified probit model) and subsequently use this prediction of whether a household will receive wealth as a single excluded instrument for wealth receipt in an ordinary two-staged IV regression, which includes all other controls. We extend our baseline IV analysis by splitting the sample according to the age of the respondents at first observation. This limits the number of observations per sample and reduces the efficacy of the instrument substantially.

Results of the IV estimation are presented in Panel B. Column (1), shows the so called “zero stage” probit estimation of Family Death on Wealth Transfer. Column (2) shows the results of the 2SLS that make use of predicted wealth transfers as an excluded instrument. The Kleibergen-Paap F-statistics, reported at the end of the table, are calculated for the excluded instruments themselves (i.e., without zero-stage estimation). Panel D showcases the additional analysis in which we split the sample by age of the respondent at first observation. The IV shows that the results are arguably most pronounced among older households where death and wealth receipt are anticipated, but the timing of the receipt is the major determinant in a household being able to transition to home ownership.

(Continued)

TABLE A8

CONTINUED

Panel B: IV Estimates		
Sample Instrument:	All initial renters Family death	
	Wealth transfer (1)	Home ownership (2)
Dependent Variable:		
Instrumented wealth transfer (10' CHF or more)		0.327* (0.20)
Family death	0.092*** [0.242***] (0.0699)	
<i>N</i>	2,602	2,602
<i>R</i> ²		0.081
Canton and year fixed effects	Yes	Yes
Main controls: initial values	Yes	Yes
Main controls: change in values	Yes	Yes
Add. controls: initial values	No	No
Add. controls: change in values	No	No
Method	Probit	2SLS
Weak identification test		
Kleibergen–Paap Wald rk F statistic		11.2
Panel C: Family death included in baseline regression		
Sample:	Full Sample	
	(1)	(2)
Wealth transfer	0.0653*** (0.0172)	0.0748*** (0.0203)
Any death in the family	0.0290 (0.0195)	0.0412 (0.0267)
Siblings	-0.0170 (0.0280)	-0.00517 (0.0308)
Wealthy parents	0.00801 (0.0242)	-0.000613 (0.0251)
Respondent under 35	0.0594** (0.0276)	0.0675** (0.0269)
Respondent between 35 and 50	0.0120 (0.0135)	0.0192 (0.0122)
Income (scaled 10.000)	0.009*** (0.0016)	0.01*** (0.0019)
Number of children	0.0692*** (0.0209)	0.0887*** (0.0242)
Education (years)	0.000855	0.00190

(Continued)

TABLE A8

CONTINUED

Panel C: Family death included in baseline regression

Sample:	Full Sample	
	(1)	(2)
	(0.00222)	(0.00275)
Married	0.0637** (0.0233)	0.0711*** (0.0236)
Price/Rent	-0.0146*** (0.00390)	-0.0161*** (0.00376)
Intact Home	0.0138 (0.0257)	0.0204 (0.0283)
Repayment arrears	-0.0942*** (0.0284)	-0.112*** (0.0313)
Change income (scaled 100.000)	0.004** (0.0015)	0.0033* (0.0017)
Increase in children	0.152*** (0.0253)	0.137*** (0.0297)
Decrease in children	-0.0180 (0.0268)	-0.0395 (0.0281)
New marriage	0.0889*** (0.0247)	0.107*** (0.0179)
Divorce	-0.0903*** (0.0281)	-0.105*** (0.0308)
Δ Price/Rent	-0.0137* (0.00728)	-0.0137* (0.00723)
# Observations	0.0189*** (0.00236)	0.00362 (0.00433)
Planning ability		-0.00214 (0.00557)
Political lean		0.0155*** (0.00462)
Δ Planning ability		0.0109 (0.00698)
Δ Political lean		-0.00852 (0.00699)
Constant	0.387** (0.145)	0.470*** (0.153)
Canton and year fixed effects	Yes	Yes
<i>N</i>	2,615	2,179
<i>R</i> ²	0.203	0.213

(Continued)

TABLE A8
CONTINUED

Instrument: Sample: Dependent variable:	Panel D: IV estimates split by age of respondent					
	Family Death under 35		35-50		over 50	
	Wealth transfer (1)	Home ownership (2)	Wealth transfer (3)	Home ownership (4)	Wealth transfer (5)	Home ownership (6)
Instrumented wealth transfer (10' CHF or more)						
Family death	0.071** [0.198**] (0.035)	0.560 (0.350)	0.131** [0.357**] (0.057)	0.203 (0.230)	0.08* [0.204*] (0.044)	0.576** (0.236)
N	862	862	861	861	868	868
R ²	0.021	0.021	0.125	0.125	0.087	-0.467
Canton and year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Main controls: initial values	Yes	Yes	Yes	Yes	Yes	Yes
Main controls: change in values	Yes	Yes	Yes	Yes	Yes	Yes
Add. controls: initial values	No	No	No	No	No	No
Add. controls: change in values	No	No	No	No	No	No
Method	Probit	2SLS	Probit	2SLS	Probit	2SLS
Weak identification test						
Kleibergen-Paap Wald rk F statistic		3.5		3.4		3.2

Notes: We make use of a IV to ensure we capture exogenously timed wealth transfers. The primary instrument is Family death. Panel A details the procedure while Panel B showcases the results. Panel C provides additional supporting evidence for the instrument. Standard errors are reported in parentheses and clustered at the cantonal level. Panel D splits the sample by age of respondent at first observation. *p < 0.10 **p < 0.05 ***p < 0.010.

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