Changes of Financial Welfare With Retirement: Does Retirement Planning Matter?*

Kremena Bachmann†

September 2021

Abstract

The financial situation of households can change dramatically after retirement. To support households smooth their financial well-being over the life-cycle, governments usually offer tax-incentivised voluntary retirement saving programs. While such programs are mainly designed to generate savings that can smooth income before and after retirement, it is not clear whether they can also smooth the subjective well-being of the households since previous studies report that the positive relationship between income and subjective well-being decreases after retirement. Using a within-subject analysis of a representative sample of individuals in Switzerland, this paper analyses whether participation in such programs can explain the heterogeneity in the subjective well-being after retirement generated by a given set of financial resources. The results of the analysis reveal that a lower income after retirement leads to a lower subjective well-being only for households with no private retirement plan. This moderating effect of retirement planning is robust to alternative specification of income and subjective well-being. Moreover, the effect is different from alternative measures of retirement preparation such as owning real estate or building savings, and it does not reflect an ability to save. These results show that participation in voluntary retirement savings programs can smooth financial welfare in the presence of negative income shocks after retirement, which is an important finding for policy makers.

Keywords: financial planning, retirement preparation, voluntary retirement saving, negative income shocks

JEL Classification: D12, D14, D91, I38, J32

*Financial support provided by the Swiss National Science Foundation (SNF) is greatly appreciated.

†University of Zurich, Plattenstrasse 32, 8032 Zurich, Switzerland; Zurich University of Applied Sciences, E-mail: kremena.bachmann@bf.uzh.ch

1 Introduction

Retirement is one of the key transitions in life associated with major changes in the financial situation of the households. To support households smoothing their income over the life-cycle, most governments adopt various forms of mandatory and tax-incentivised retirement saving programs. While such programs may help households smooth the income around retirement, it is not clear whether they can also smooth the subjective financial well-being of the households.

In economic terms, subjective financial well-being can be seen as a measure of preferences (Bruno et al., 1999) or individual financial welfare (Kahneman & Krueger, 2006); it is also positively correlated with life satisfaction (Ngamaba et al., 2020). Although income as an objective measure of financial well-being is in general positively correlated with the subjective financial welfare, the correlation is in general week (see for a review Diener and Biswas-Diener, 2002) and it is even weaker for older households (Hira & Mugenda, 1998; Hsieh, 2001; Stoller & Stoller, 2003). This suggests that households differ considerable in the assessment of the their financial welfare generated by a given set of financial resources, in particular after they enter retirement. These differences need to be considered if smoothing the financial welfare over the life-cycle is a policy target.

Voluntary retirement saving programs represent an interesting example of policy measures targeting the financial welfare over the life-cycle since participation in such programs does not only generate financial resources after retirement but also require some sort of retirement planning (in contrast to mandatory retirement saving programs with less involvement). This is particularly true for voluntary retirement saving programs with no default enrolment, in which individuals face a trade-off between receiving tax benefits when saving and giving up liquidity while working since savings withdrawal before retirement is usually restricted. While several studies show that financial planning has a positive effect on both, the accumulated wealth (Ameriks et al., 2003; van Rooij et al., 2012) and on the financial welfare at different stages over the life-cycle (Dorfman, 1989; Elder & Rudolph, 1999; Joo & Grable, 2004; Clark et al., 2006; Noone et al., 2009; Woodyard & Robb, 2016), it is not known whether participating in voluntary retirement saving programs can have a similar effect on the subjective financial well-being of households entering retirement.

More importantly, it is not known whether retirement planning, which is a necessary condition for participating in such retirement saving programs, can moderate the effect of income on the subjective financial welfare after retirement. This moderation effect may emerge if retirement planning makes income changes after retirement less surprising. If income surprises after retirement affect financial welfare,

as suggested by Barrett and Kecmanovic (2013), then retirement planning is expected to have a moderating effect on how income affects financial welfare after retirement. Analysing the moderating effect of retirement planning would shed more light on the question of why households with the same income after retirement assess their financial welfare differently. It would also give insights on the question of whether voluntary retirement saving programs have further benefits for households in addition to the benefit of generating supplemental resources after retirement.

To assess whether retirement planning as reflected in the participation in voluntary retirement savings program moderates how income affects financial welfare when entering retirement, this study analyses a longitudinal panel representative of households living permanently in Switzerland. The sample comprises individuals who participated in at least two consecutive waves and entered into retirement between them. In contrast to cross-sectional studies analysing the determinants of financial welfare, the analysis is based on a within-subject comparison before and after retirement. This approach allows controlling for confounding effects emerging from individual differences that are not observable. The rich set of additional characteristics assessed over time allows controlling for various time-variable individual characteristics.

The results show that the effect of income on financial welfare is positive, but asymmetric: income affects financial welfare after retirement only if income is lower than before retirement. Higher income immediately after retirement (e.g., as a result of an accelerated draw-down from lump-sum pension payments) does not significantly increase the financial welfare of the households. In particular, lower income after retirement reduces the financial welfare only for households with no private retirement plan. For households who have been planning their retirement by participating in voluntary retirement saving programs, an income decrease after retirement does not affect their financial welfare. This moderating effect of private retirement planning is robust to alternative definitions of income and financial welfare. Moreover, the effect of voluntary participating in these pension plans is different from alternative retirement preparation measures such as owning real estate or building savings (net wealth) and does not reflect ability to save. Finally, the moderating effect of such retirement planning is particularly strong for households with below-average income before retirement with a lower ability to save for their retirement.

This study contributes to the previous literature on subjective financial well-being by providing evidence that the weak relationship between income and subjective financial well-being is related to the moderating effect of retirement planning. When income decreases after retirement, consumption decreases as well, but this study shows that the individual economic welfare response depends on whether the change of income is expected or not. Individuals participating in voluntary retirement programs are less likely to be surprised by an income drop after retirement, since participation in voluntary retirement

programs reveals that households were involved in some sort of retirement planning. In particular, in order to decide how much to contribute, households need to know at least whether they have a "retirement gap", i.e. whether the expected pensions provided by mandatory retirement savings programs match the desired retirement income. This study provides evidence, that even if the income of these households decreases so that they need to adjust their consumption upon retirement downwards, their subjective financial welfare does not necessary decrease. These findings complement other studies on the relationship between income and subjective financial welfare that consider characteristics such as age (Hansen et al., 2008), civil status and gender (for an overview, see Diener and Biswas-Diener, 2002), or attitudes (Gasiorowska, 2014).

This study also contributes to the literature on the benefits of financial planning by documenting that retirement planning can neutralise the negative effect of lower income after retirement on different measures of financial welfare. Previous studies address only the direct effect of financial planning on financial well-being, but their cross-sectional nature does not allow proper determination of causality. This study overcomes this limitation by using a careful sample construction based on the institutional characteristics of the voluntary retirement saving programs and a within-subject design before and after retirement.

Finally, the study contributes to the literature of voluntary retirement savings by showing that participating in such programs is beneficial for retirees beyond building savings that can be used as income after retirement. Previous studies on voluntary retirement savings programs mainly deal with the question of how to entice households' participation under the assumption that the main benefit is financial, i.e. that voluntary savings can smooth income over the life-cycle. This study shows that participation can also smooth subjective financial well-being in particular when the income decreases after retirement.

2 Financial Well-Being Over the Life-Cycle

The financial well-being of households over the life-cycle has been subject of research of several studies. Using objective measure of financial well-being such as income and expenditures, economists analysing their development over the life-cycle sought to explain why expenditures fall at retirement (for a review, see Hurst, 2008). In addition to using objective measures of well-being, several economic studies considered subjective measures of financial well-being based on the support in the literature that such measures reflect individual preferences and financial welfare (Kahneman & Krueger, 2006; Frey & Stutzer, 2002). One literature strand analyses how financial welfare varies with age and in particular how it changes after retirement. The main finding of these studies is that although income declines after retirement, the

financial welfare appears to follow an opposite trend with a clear increase among those beyond working age. For example, Hira and Mugenda (1998) find that retired persons are more satisfied with their financial situation than non-retired persons although they have a lower income. Using perceived income adequacy as a measure of financial welfare, Stoller and Stoller (2003) find that older people are more optimistic regarding their income adequacy (as an alternative measure of financial welfare), after controlling for income and health status.

Another strand of research studies the importance of financial planning for the financial well-being over the life-cycle. Some studies focus on savings or wealth accumulation as an objective measure of financial well-being. In the cross-section, Hershey et al. (2007) find that financial planning is associated with increased savings for retirement. Also Stawski et al. (2007) finds that planning predicts savings tendencies. Taking into account that financial planning may be endogenous, Ameriks et al. (2003) suggest that individuals with a higher propensity to plan spend more time developing financial plans, and that such planning leads to increased wealth. Financial planning does not need to be complicated in order to be beneficial. Binswanger and Carman (2012) find that those who simply rely on a rule of thumb accumulate as much savings as proper planners, while those following an unsystematic approach save substantially less.

Using financial satisfaction as a subjective indicator of financial well-being, Elder and Rudolph (1999) find that "thinking about retirement" and "attending planning meetings" is associated with a higher financial satisfaction of retirees, after controlling for income, wealth, marital status and health. The positive association holds even for individuals who retired involuntary. Also, Noone et al. (2009) find that those who has "discussed retirement" with their spouses and had retirement or superannuation saving plans while working report a greater well-being when they retire. In a meta-study, Topa et al. (2009) find that that consequences of retirement for financial well-being are more directly associated with retirement planning than for other facets of the process.

Other studies on the importance of financial planning show that financial planning is associated with a higher financial satisfaction also during the working life. For example, Joo and Grable (2004) finds that financial practices (e.g., cash management, credit management, budgeting, financial planning, and general money management) has the strongest association with the individual's financial satisfaction level. Also Xiao et al. (2009) and Aboagye and Jung (2018) find that positive financial behaviours such as maintaining emergency savings are positively associated with financial satisfaction. Using a sample of individuals using credit counselling services, Xiao et al. (2006) find that having developed a plan for the financial future, started or increased savings, and having contacted a financial planner are associated with a higher financial

satisfaction. Also Woodyard and Robb (2016) find that planing for retirement correlated positively with financial satisfaction.

Although these studies collectively support a positive relationship between planning and financial well-being, their cross-sectional nature does not allow for robust conclusions about causality. It remains unclear whether planning proceeds well-being or well-being influences the ability or the willingness to plan. Furthermore, it is not clear whether there are unobservable individual characteristics that may further hinder conclusions on causality. Only few studies on subjective financial well-being address these issues. To identify the drivers of subjective financial well-being after retirement, Barrett and Kecmanovic (2013) and Hetschko et al. (2014) use within-subject change of subjective wil-being and Bonsang and Klein (2012) and Kesavayuth et al. (2016) use fixed effects estimators. These studies, however, do not consider the importance of financial or retirement planning for the subjective well-being after retirement. One exception is Noone et al. (2009) who use lagged values of retirement planning to assess its impact on retirement satisfaction, but the study does not consider individual fixed effects. More importantly, there are no studies that explore the importance of retirement planning as a moderator of the relationship between objective and subjective measures of financial well-being. In this context, Barrett and Kecmanovic (2013) only hints that lower than expected income may significantly reduce the financial satisfaction after retirement.

3 Data and Methodology

We use data from the Swiss Household Survey (SHP) for the period between 1999 and 2019. The survey tracks individuals within the same household and across waves. The sample of individuals is representative of the whole of Switzerland. It includes households of various nationalities provided that their members live on Swiss territory throughout the year.[1] The participants are a proportionally stratified random sample of the various social groups in all regions of Switzerland.

Questions are asked on individual and on household level. The individual questionnaire contains questions on family, health, social origins, education, employment, income, networks, religion, leisure, media, politics, and values. The household questionnaire contains questions about accommodation, living standards, the household's financial situation, the household's organisation, and the family. Questions contain "objective" and "subjective" elements. A detailed description of the panel and its characteristics can be found in the introductory chapter of Tillmann et al. (2018).

[1] Seasonal workers, cross-border workers, and foreign tourists are not part of the permanent resident population and are therefore not taken into account in the sample.

3.1 Measurement

The dependent variable in the analysis is the change in subjective financial well-being before and after retirement. The subjective financial well-being is assessed with two questions. The first question asks for an assessment of the *income adequacy*, i.e. *"How do you manage on your household's current income, 0 means "with great difficulty" and 10 "very easily"?"*. The second question asks for an assessment of the *financial satisfaction*: *"Overall how satisfied are you with the financial situation of your household, if 0 means "not at all satisfied" and 10 "completely satisfied"?"*. Other studies assessing the subjective financial well-being of households use the same or very similar questions (Hira & Mugenda, 1998; Joo & Grable, 2004; Mitrut & Wolff, 2011; Grable et al., 2013).

The main independent variable in the analysis is the gross income of the household. This variable include all sources of income of all household members between two interviews. A second measure of household's gross income (*equivalence* income) accounts for the size of the household. Further, we use a measure for the *disposable* household income. Disposable household income refers to household income after the deduction of compulsory expenses (social security contributions, direct taxes, health insurance premiums, payments to other households). A detailed description of the construction of these variables is provided by (Kuhn, 2008)). In the estimations, we use logarithmic values of the income measures to take into account that the same change of income (in CHF) may have a different meaning for households depending on the size of their income.

For the measurement of retirement planning, we use the question: *"Do you or any other member of your household have a "3rd pillar" pension fund?"*. We construct a dichotomous variable that takes the value of 1 if the respondents state that they have such private pension plans when they enter retirement and 0 otherwise.

The "3rd pillar pension fund" is a tax-incentivised retirement saving program in Switzerland. Anyone earning an income can pay a set amount into this private pension plan with their bank or insurance company. This amount can be deducted from the taxable income. There is no wealth tax on the savings in these funds before withdrawal. Withdrawals before reaching retirement age are only possible if they are used to buy or build a residential property, to go abroad to live permanently, or to set up an own business. Withdrawals are taxed as income, but at a reduced rate.

Some sort of retirement planning is a necessary condition for having such private retirement plan for the following reasons. Participation in the retirement saving program is not offered as a default option. Although individual subscription is as easy as opening a bank account, it is beneficial only if households make actual contributions. But the decision on how much to contribute requires an assessment of the

current and the future financial situation of the households, since the contributions cannot be withdrawn before retirement unless one buys an own home, start a business, or leaves the country. The contributions are also protected in the case that beneficiaries need to apply for social security before retirement.[2] For this reason, private pension plans cannot be used as emergency saving accounts. Indeed, Guariglia and Markose, 2000 find that voluntary contributions to private pension plans are made essentially for retirement purposes, whereas conventional saving is undertaken for precautionary motives.

It should be also taken into account that households reporting having no private pension plans at the time of the retirement may have participated in the past and used their savings to buy a home or start a business. Such households use the tax advantages of the program for purposes other than to prepare for retirement. For this reason they are categorised as not having planed for retirement (below, we explain how we test whether real estate ownership may serve as an alternative form of retirement planning). It is also possible to plan for retirement outside of the tax-incentivised retirement saving program, but this option is less attractive since the tax benefits are lost. This option is expected to be used in addition to participating in the tax-incentivised private pension program.

Similar to Noone et al., 2009, we use actual behaviour to capture retirement planning. Other studies use proxies based on attitudes (Xiao & O'Neill, 2018), reported intention (**VanSchie2012a**), or proxies based on activities such as "having developed a plan for retirement saving" (van Rooij et al., 2012), "thinking about retirement" (Elder & Rudolph, 1999; Alessie et al., 2011), "trying to find out how much to save in order to reach a certain standard of living at old-age" (Anderson et al., 2017; Bucher-Koenen & Lusardi, 2011). Since such attitudes and activities represent necessary conditions for the decision to enter retirement with a voluntary retirement saving plans, we consider the availability of such plans as a direct result of retirement planning.

Additional considerations allow us to draw conclusions on the appropriateness of this measure as a proxy for retirement planning. For example, it is possible that households plan their retirement, but they do not have a private pension plan because they cannot save. To test whether the availability of a private pension plan reflects the availability of financial resources, we use the question *"Is it because you cannot afford to do it or for another reason?"* that has been asked if respondents report having no private pension plan. We test whether the main results change when we exclude participants responding that they do not have a private pension plan because they cannot afford it (44 out of 458 reporting having no private pension plan for that reason).

[2]Before approving extended financial payments, the authorities require than an individual exhausts most of the financial assets, but retirement savings are excluded.

Ownership of real estate can be considered as another form of preparing financially for retirement. To evaluate, which household owns real estate we use the questions *"Are you, or another person living in your household, a tenant or owner of the accommodation you currently live in?"* and *"Since (month-year), have you received an income from renting real estate property?"*, where (...) is the date of the last wave. A dichotomous variable is constructed that takes the value of 1 if respondents live in the property they own or have rental income and 0 otherwise. Ownership of real estate does not change substantially around the time of retirement.[3]

In addition to planning, participation in voluntary retirement saving programs may reveal that households have been saving for their retirement. To estimate the net value of these savings, households not living in their own property have been asked one global question about their net wealth: *"What is the value of assets owned by your household, such as real estate assets, savings, stocks and bonds, after the deduction of potential debt?"*. Households living in their own real estate have been asked: *"In addition to the real estate assets already mentioned, what is the value of other assets owned by your household, such as other real estate assets, savings, stocks and bonds, after the deduction of potential debt?"*. Non-response is imputed based on characteristics of the main earner and characteristics of the household (for more details on the imputation procedure, see Ursina Kuhn and Crettaz, 2015). The net wealth is assessed only in waves 2012 and 2016. We use the average of these data (if available) as a very rough approximation for the net wealth of the household. To limit the impact of the noise in these data, we use the median level of net wealth (CHF 150,000 as reported in Table 1) to distinguish between households with higher and lower net wealth.

Other time-variant variables with potential impacts on the subjective financial well-being are changes of the household size, civil status, physical and psychological health. In our sample, household size and civil status change only for a few individuals around retirement[4]. We ignore these changes in the analysis. Instead, based on the empirical evidence in previous studies (Plagnol, 2011; Bonsang & Klein, 2012; Fonseca et al., 2014) we focus on changes in the health status as a potential driver of additional expenditures that may affect the reported financial well-being. The health status is assessed with several questions. First, we use the general question: *"We are now going to talk about various aspects of your health. How do you feel right now?"* with the possible answers "very well", "well", "so, so (average)", "not very well" and "not well at all". We also use the question asking for an assessment of the current health

[3]In our sample, only 19 (out of 908) individuals report losing their status of real estate owner and 10 report becoming real estate owner at the time of their retirement.

[4]Only 3 out of 925 individual report becoming a widower or a widow after retirement. The household size decreased by one person in 16 households.

status as suggested by Diener et al., 1999: *"How satisfied are you with your state of health, if 0 means "not at all satisfied" and 10 "completely satisfied"?*. Second, we use the question to assess the degree of health impediment: *"Please tell me to what extent, generally, your health is an impediment in your everyday activities, in your housework, your work or leisure activities ? 0 means "not at all" and 10 "a great deal"*. Third, we use a question to assess the degree of a negative affect, which is based on the conceptualisation of Watson et al. (1988): *"Do you often have negative feelings such as having the blues, being desperate, suffering from anxiety or depression, if 0 means "never" and 10 "always"?*

3.2 Sample Construction

For the purpose of identification, the construction of the sample is based on the institutional characteristics of private pension plans used as a proxy for retirement planning. In particular, we use the fact that private pension plans can be opened only when being part of the active labor force and can be closed only after entering retirement (unless households use the tax benefits to buy a new home or start a business before retirement). For this reason, we construct the sample to include individuals who just left the labor force because of old-age retirement. After leaving the labor force, these individuals are not eligible to open private pension plans anymore. This feature allows tackling reverse causality issues. But since retirees can use their private retirement plans and close them after retirement, we have to exclude individuals who have been retired for longer time.

To identify the individuals who just retired, we compare their working status between two subsequent survey waves. We select individuals who changed their working status from "employed", "self-employed", or "unemployed" in one wave to "retired because of old age" and "not in labor force" in the next one.[5]

We further restrict the sample to include individuals that are unlikely to enter the active labor force after reporting entering retirement because of old age. This is expected to hold for individuals who are eligible to start withdrawing retirement saving benefits. This eligibility is defined according to the official retirement age, which is 65 for male and 64 for females.[6] Individuals can start withdrawing retirement savings from mandatory and voluntary retirement saving funds five years before this official retirement age. Therefor we restrict the sample to include females older than 59 and males older than 60. Since savings in voluntary retirement saving plans are beneficial only until 70 for males and until 69 for females, we exclude individuals who are older. With these restrictions, the sample consists of newly retired females

[5] In this sample, the individuals reporting to be "unemployed" before retirement report also that they have spent at least one year in paid work. The availability of working income before retirement is an eligibility condition for drawing benefits from voluntary retirement saving plans.

[6] The retirement age for females have been adjusted slightly over time. Between 1962 and 2001, it was 62 and between 2001 and 2005 it was 63. Since 2005, the official retirement age for females is 64.

between 59 and 69 and newly retired males between 60 and 70.

Finally, we restrict the sample to include only household members older than 59. With this restriction we reduce the probability that a person who entered retirement assesses the financial well-being of the household based on the assumption that his or her younger spouse can open a private retirement pension account and contribute to the financial welfare of the household.

3.3 Empirical Model

Each individual in the sample is observed just before ($t = 1$) and just after retirement ($t = 2$). The empirical analysis is based on the following model:

$$\begin{aligned} y_{i1} &= \mu_1 + \beta x_{i1} + \delta Z_{i1} + \alpha_{i1} + \epsilon_{i1} \\ y_{i2} &= \mu_2 + \beta x_{i2} + \delta Z_{i2} + \alpha_{i2} + \epsilon_{i2} \end{aligned} \tag{1}$$

where y_{it} is the subjective financial well-being of individual i, x_{it} is the logarithm of the annual gross households income of individual i, Z_{it} is a vector of other individual characteristics that change over time with a potential impact on the financial well-being. Further, μ_1 and μ_2 are different intercepts that allow for changes of y over time that are unrelated to x and Z. The effect of x on y is β, which is assumed to be the same at both time points. The ϵ_{it}s are random error terms that are specific to each time point and assumed to be independent of anything else on the right-hand side of the equation. Finally, α_i is an unobserved variable that represents the combined effects on y of all variables that are specific to the individual but that do not change over time.

If the αs are treated as constants, there is no need to make strong assumptions about them. In particular, we can allow that αs are correlated with the xs. This implies that the estimates of β can control for all time-invariant predictors both observed and unobserved. In such fixed-effect model, only within-individual variation is used to estimate the parameters, which makes them particularly appropriate for examining the differential consequences of increases and decreases in x.

To estimate the fixed-effect model, we subtract the time 1 equation (before retirement) from the time 2 (after retirement) equation, which produces

$$y_{i2} - y_{i1} = (\mu_2 - \mu_1) + \beta(x_{i2} - x_{i1}) + \delta(z_{i2} - z_{i1}) + (\epsilon_{i2} - \epsilon_{i1}) \tag{2}$$

We estimate the model for two sub-samples depending on whether the households had a private retirement fund when entering retirement or not. In each sub-sample, we are interested in the coefficients β. To

estimate whether these coefficients differs across the two sub-samples, we pool the data and use an interaction term.

Further, the model is modified to allow for the effect of x on y to be asymmetric. For this purpose, we define

$$\begin{aligned} x_i^+ &= x_{i2} - x_{i1} \text{ if } (x_{i2} - x_{i1}) > 0, \text{otherwise } 0 \\ x_i^- &= -(x_{i2} - x_{i1}) \text{ if } (x_{i2} - x_{i1}) < 0, \text{otherwise } 0 \end{aligned} \tag{3}$$

Neither dependent variable is ever negative, but the first represents an increase, and the second represents a decrease of x. It easily can be shown that $x_i^+ - x_i^- = x_{i2} - x_{i1}$.

The working model then becomes

$$y_{i2} - y_{i1} = (\mu_2 - \mu_1) + \beta^+ x_i^+ + \beta_i^- x_i^- + \delta(z_{i2} - z_{i1}) + (\epsilon_{i2} - \epsilon_{i1}) \tag{4}$$

Thus, β^+ represents the change in y for a unit increase in x, and β^- represents the change in y for a unit decrease in x. The implicit reference category is no change from time 1 to time 2.

Again, we estimate the model in (4) using two sub-samples depending on whether the person who just retired is in a household with a private pension fund. In each sub-sample, we are interested in the coefficients β^+ and β^-. By pooling the data and using an interaction term, we also test whether the coefficients differ across households with and without a private pension plan when entering retirement.

Since we use data on individual and household level, we cluster the standard errors at household level. This way we take into account that responses of individuals living in the same household may be correlated.

3.4 Descriptive Statistics

The final sample consists of 438 men and 487 women. Most respondents (534 or 59%) are married couples without children, 236 (26%) are one person household with one adult and 57 (6%) respondents live in a household with 3 or 4 adults. Only 5 respondents live in a household with children (below 17 years). Most of the respondents (594 or 64%) are married or divorced (176 or 19%), only 74 respondents (8%) are single, 68 are widower or widow (7%), and 14 are separated (2%).

Descriptive statistics for the variables used in the estimations are presented in Table 1.

Table 1: Descriptive statistics

	mean	SE	p25	p50	p75	non-planners mean	planners mean	MW test z-stat
planners	0.489							
real estate owners	0.641							
income adequacy$_{t=2}$	7.482	0.068	6	8	9	7.240	7.735	-3.536
income adequacy$_{t=1}$	7.744	0.066	7	8	9	7.448	8.055	-4.738
income adequacy, d	-0.271	0.063	-1	0	1	-0.216	-0.328	1.087
financial satisfaction$_{t=2}$	7.766	0.060	7	8	9	7.569	7.971	-2.749
financial satisfaction$_{t=1}$	7.956	0.059	7	8	9	7.763	8.157	-3.52
financial satisfaction, d	-0.190	0.054	-1	0	1	-0.193	-0.186	0.713
gross household income$_{t=2}$	88355	2124	50900	78000	109680	76226	101684	-6.571
gross household income$_{t=1}$	107746	3393	62500	91200	130200	91956	124609	-6.386
log gross income, d	-0.182	0.016	-0.341	-0.109	0.044	-0.160	-0.207	1.495
equivalence household income$_{t=2}$	61011	1377	39220	54000	74100	54025	68688	-6.316
equivalence household income$_{t=1}$	74733	2566	46600	65100	87390	65143	84974	-6.174
log equivalence income, d	-0.179	0.016	-0.345	-0.106	0.052	-0.155	-0.206	1.461
disposable household income$_{t=2}$	66188	1360	40261	57839	81529	58140	74601	-6.712
disposable household income$_{t=1}$	75297	2003	46504	64525	93088	65927	85049	-6.237
log disposable income, d	-0.120	0.015	-0.285	-0.085	0.077	-0.118	-0.122	0.15
health status$_{t=2}$	2.000	0.021	2	2	2	2.041	1.957	1.923
health status$_{t=1}$	2.003	0.021	2	2	2	2.022	1.984	0.764
health status, d	-0.002	0.022	0	0	0	0.022	-0.027	1.422
satisfaction with health status$_{t=2}$	7.844	0.053	7	8	9	7.754	7.939	-1.411
satisfaction with health status$_{t=1}$	7.831	0.056	7	8	9	7.792	7.873	-0.237
satisfaction with health status, d	0.012	0.051	-1	0	1	-0.043	0.070	-1.683
health impediment$_{t=2}$	2.131	0.084	0	1	4	2.235	2.023	1.662
health impediment$_{t=1}$	2.071	0.086	0	1	4	2.115	2.025	0.215
health impediment, d	0.062	0.083	-1	0	1	0.128	-0.007	0.776
depression, blues, anxiety$_{t=2}$	1.882	0.070	0	1	3	2.004	1.755	1.199
depression, blues, anxiety$_{t=1}$	1.851	0.068	0	1	3	1.911	1.789	0.005
depression, blues, anxiety, d	0.031	0.062	-1	0	1	0.093	-0.034	0.355
net wealth$_{t=1,2}$	257900	84650	40000	150000	457275	189648	380740	-0.354
high wealth	0.589					0.551	0.624	-2.192

The mean values of the variables are also reported for two sub-samples of individuals entering retirement with and without a private pension plan (planners and non-planners). The last column reports the z-statistics for the Mann-Whitney tests of the null hypothesis that the distribution of the variables in the two sub-samples is identical. The descriptive statistics show that the two measures of subjective well-being (income adequacy and financial satisfaction) are at relative high levels before retirement. On average, the subjective financial well-being decreases slightly after entering retirement. All objective measures of financial well-being (gross household income, equivalence income, and disposable household income) decreases as well, on average. The gross household income decreases on average by 9% in the sample. Half of the respondents report a decrease of about 10%, in the lowest quartile the decrease is more than 29%, in the highest quartile the reported household income increases by about 4%. Income increases after retirement can be explained with lump-sum payments from mandatory pension plans or some extraordinary payments (e.g., payments from inheritance). The distribution of the control variables does not change substantially after retirement. The reported health status remains stable, on average. The satisfaction with the health status increases slightly after retirement, on average, although both the average degree of health impediment in everyday activities and the reported frequency of feeling depression, blues or anxiety increase after retirement.

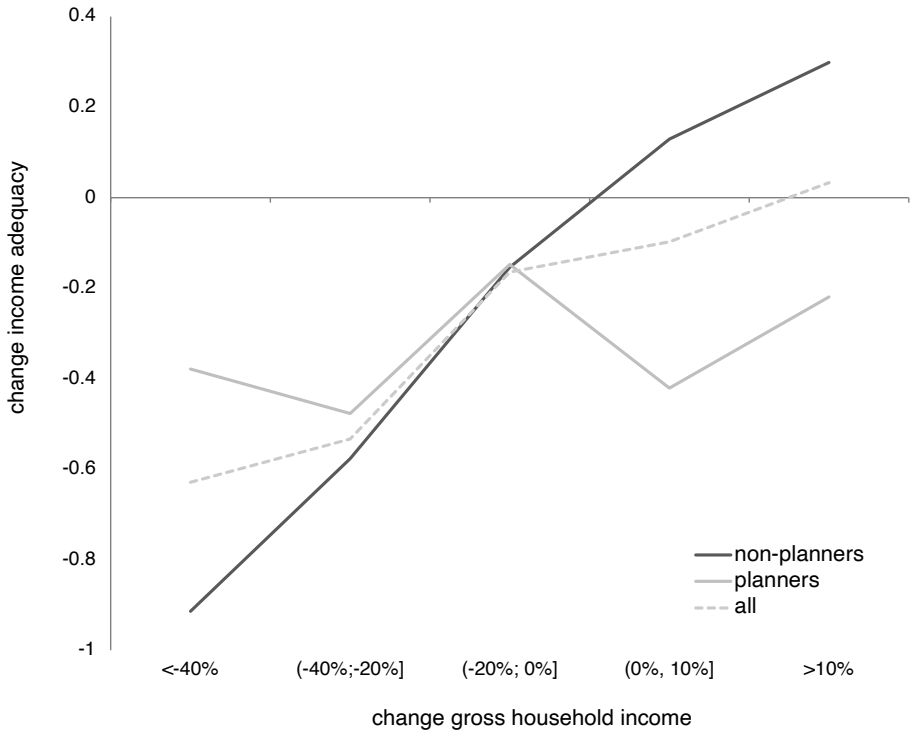
Regarding the rest of the independent variables, we observe that about 49% of the respondents report that their household has a private retirement plan when entering retirement. About 64% of the respondents are real estate owners. The median net wealth (without the real estate in which the participants live) is CHF 150,000 in the sample. In the lowest quartile, households have less than CHF 40,000, in the highest quartile, households report having more than CHF 480,000 net wealth.

4 Results

4.1 Main Results

Before doing any estimations, we examine descriptively whether the financial adequacy as a measure of financial welfare changes when the income changes after retirement. To simplify the exposition, we split the data depending on the size of the income change when entering retirement, so that we have 5 bins with approximately equal number of observations. Within each bin of observations, we calculate the average change of financial adequacy for the whole sample and for two different sub-samples of households depending on whether they had a private retirement plan when they retired or not. We are interested to observe whether there are any differences in how financial adequacy changes with changes of the household income among households with and without a plan. Figure 1 displays the results of this descriptive analysis.

Figure 1: Households' gross income and income adequacy



The dark grey line in Figure 1 shows how the average financial adequacy in the whole sample changes when the gross income of households without a plan changes after retirement. For the households in the whole sample, there is a clearly observable positive trend in how the perceived income adequacy changes with income after retirement. In contrast, the perceived income adequacy of households with a plan (see light grey line) appears to depend less on the income change after retirement.

To test the significance of these observations while controlling for confounding effects emerging from time-variable individual characteristics, we estimate the model specified in equation (2) for the whole sample and for each of the two sub-samples (planners and non-planners). The model is estimated using OLS.[7] The results are reported in Table 2.

Table 2: Effect of income on income adequacy

The table reports the results of OLS estimations based on equation (2). All variables are included as differences (d) except the dichotomous variable *planner* that takes the value of 1 if the household has a private retirement plan and 0 otherwise. Robust standard errors clustered at the household level are provided in parentheses. ***, ** respectively * indicate significance of the estimated coefficients at 1%, 5%, respectively 10% level.

	income adequacy, d			
sub-sample:		planners	non-planners	
	(1)	(2)	(3)	(4)
log gross income, d,	0.508***	0.173	0.850***	0.844***
	(0.146)	(0.221)	(0.210)	(0.199)
planner				-0.176
				(0.148)
planner#log gross income, d				-0.663**
				(0.293)
health status, d	-0.009	0.132	-0.106	-0.007
	(0.110)	(0.165)	(0.151)	(0.110)
satisfaction with health status, d	0.054	0.119	0.007	0.049
	(0.058)	(0.081)	(0.085)	(0.059)
health impediment in everyday activities, d	-0.023	-0.055	0.014	-0.025
	(0.032)	(0.044)	(0.045)	(0.032)
depression, blues, anxiety, d	0.012	0.059	-0.019	0.007
	(0.042)	(0.065)	(0.059)	(0.043)
constant	-0.187	-0.584	0.115	-0.157
	(0.363)	(0.446)	(0.558)	(0.360)
observations	789	375	407	782
year fixed effect	yes	yes	yes	yes

The first column includes the estimated coefficients for the whole sample. We can see that the income adequacy is lower (higher) than before retirement when the income decreases (increases) after retirement. This effect disappears in the sub-sample of planners. In the sub-sample of planners, the income change after retirement does not have a significant effect on the perceived income adequacy. In contrast, in the sub-sample of non-planners, an income adequacy increases (decreases) with the income after retirement.

[7]The distribution of the variable "financial adequacy" is skewed in both periods, but the distribution of their difference between the two periods is symmetric around 0. This observation supports the use OLS as an estimation method.

The difference in how income adequacy changes with changes in the household income between planners and non-planners is statistically significant as the interaction term in the last column suggests.

To take into account that positive and negative changes of income may have a different effect on the perceived income adequacy, we estimate the model as specified in equation (4) while controlling for time-varying confounding factors. Since the dependant variable is the same, we use the OLS estimation method again. The results are reported in Table 3.

Table 3: Asymmetric effect of income on income adequacy

The table reports the results of OLS estimations based on equation (4). All variables are included as differences (d) except the dichotomous variable *planner* that that takes the value of 1 if the household has a private retirement plan and 0 otherwise. The variables *d log gross income>0* and *d log gross income<0* are specified as in equation (3) and have always positive values. Robust standard errors clustered at the household level are provided in parentheses. ***, ** respectively * indicate significance of the estimated coefficients at 1%, 5%, respectively 10% level.

	income adequacy, d			
sub-sample:		planners	non-planners	
	(1)	(2)	(3)	(4)
planner				-0.282
				(0.171)
d log gross household income> 0	0.820**	0.985**	0.649	0.789
	(0.352)	(0.481)	(0.492)	(0.480)
planner#d log gross income> 0				0.143
				(0.686)
d log gross income< 0	-0.417**	0.041	-0.916***	-0.861***
	(0.175)	(0.240)	(0.269)	(0.249)
planner#d log gross income< 0				0.878***
				(0.337)
health status, d	-0.004	0.141	-0.112	-0.005
	(0.110)	(0.164)	(0.153)	(0.111)
satisfaction with health status, d	0.054	0.116	0.006	0.048
	(0.058)	(0.081)	(0.085)	(0.059)
health impediment in everyday activities, d	-0.024	-0.053	0.016	-0.024
	(0.032)	(0.045)	(0.046)	(0.032)
depression, blues, anxiety, d	0.010	0.051	-0.018	0.004
	(0.042)	(0.066)	(0.059)	(0.043)
constant	-0.250	-0.703	0.166	-0.151
	(0.373)	(0.457)	(0.586)	(0.378)
observations	789	375	407	782
year fixed effect	yes	yes	yes	yes

The first column reports the estimated coefficients for the whole sample. In the whole sample, income adequacy changes with the income. In the sub-sample of planners (see column 2), the income adequacy increases only when the income increases, but it does not decrease when the income decreases. This changes in the sub-sample of non-planners (see column 3). in this sub-sample, an increase in income does not have any significant impact on income adequacy. However, when the income after retirement decreases, the financial adequacy decreases as well. The differences in how financial adequacy decrease with a decrease of income between households with and without a private retirement plan is statistically

significant as the second interaction term suggests. The estimated coefficients of the second interaction term and the variable capturing a decrease of income suggest that having a private retirement plan completely neutralises the negative effect of a lower income on the financial adequacy after retirement.

Income adequacy is one of several ways to measure subjective financial well-being. An alternative way is to use the degree of satisfaction with the financial satisfaction. We repeat the previous analysis using this measure. The results are reported in Table 4.

Table 4: Effect of income on financial satisfaction

The table reports the results of OLS estimations based on equation (2). All variables are included as differences (d) except the dichotomous variable *planner* that takes the value of 1 if the household has a private retirement plan and 0 otherwise. The variables *d log gross income>0* and *d log gross income<0* are specified as in equation (3) and have always positive values. Robust standard errors clustered at the household level are provided in parentheses. ***, ** respectively * indicate significance of the estimated coefficients at 1%, 5%, respectively 10% level.

	financial satisfaction, d			
	(1)	(2)	(3)	(4)
planner		-0.115		-0.210
		(0.124)		(0.154)
log income, d	0.293*	0.674***		
	(0.153)	(0.210)		
planner#d log income		-0.759***		
		(0.270)		
d log income> 0			0.520	0.499
			(0.336)	(0.525)
planner#d log income> 0				-0.044
				(0.636)
d log income< 0			-0.227	-0.729***
			(0.206)	(0.257)
planner#d log income< 0				0.957***
				(0.339)
Constant	-0.450	-0.455	-0.496	-0.424
	(0.308)	(0.306)	(0.316)	(0.311)
Observations	787	780	787	780
year fixed effect	yes	yes	yes	yes
controls	yes	yes	yes	yes

In the first column we can see that income changes are positively related to changes of financial satisfaction (as with income adequacy in Table 2), but the relationship is statistically only marginally significant. Similar to the results reported in Table 2, having a private pension plan eliminates the effect of income change on the financial satisfaction after retirement (see column 2). The estimation results comparing the effect of an income increase and an income decrease on financial satisfaction after retirement are reported in column 3 and 4. An increase or a decrease of income does not significantly affect the financial satisfaction (see column 3). However, having a private pension plan can neutralise the effect of a lower income of the financial satisfaction after retirement as the estimated coefficients of the interaction effect and the negative income change suggest (see column 4).

4.2 Further Results

The main results show that having a private retirement plan neutralises the negative effect of a lower income on the subjective financial welfare as measured by the perceived financial adequacy and the financial satisfaction after retirement. We further analyse whether the effect is the same for households with different income before retirement.

For this purpose we build two sub-samples, depending on the median gross income before retirement as reported in Table 1. We estimate the models specified in equation (4) for each of these sub-samples using the change of financial adequacy, respectively the change of financial satisfaction as dependent variables. The results are presented in Table 5.

Table 5: Effects of income on financial welfare for households with higher and lower income

The table reports the results of OLS estimations based on equation (4). Sub-samples are defined based on the gross households income before retirement. *High income* households are households with a gross household income before retirement larger or equal the median (CHF 91,300 as reported in Table 1). *Low income* households are households with a gross household income before retirement smaller than the median. All variables are included as differences (d) except the dichotomous variable *planner* that takes the value of 1 if the household has a private retirement plan and 0 otherwise. The variables *d log gross income*>0 and *d log gross income*<0 are specified as in equation (3) and have always positive values. Robust standard errors clustered at the household level are provided in parentheses. ***, ** respectively * indicate significance of the estimated coefficients at 1%, 5%, respectively 10% level.

	income adequacy, d		financial satisfaction, d	
sub-sample	low income$_{t=1}$	high income$_{t=1}$	low income$_{t=1}$	high income$_{t=1}$
	(1)	(2)	(3)	(4)
log gross income>0	1.077*	-0.193	0.616	0.185
	(0.575)	(0.584)	(0.666)	(0.581)
planner	-0.483	-0.188	-0.184	-0.275
	(0.298)	(0.225)	(0.273)	(0.191)
planner#log gross income>0	0.142	0.432	-0.286	0.928
	(0.765)	(1.214)	(0.774)	(1.260)
log gross income<0	-1.298**	-0.760***	-0.973	-0.635**
	(0.654)	(0.282)	(0.602)	(0.289)
planner#log gross income<0	2.012***	0.323	1.466*	0.810**
	(0.749)	(0.380)	(0.752)	(0.348)
constant	-0.283	0.609	-0.564	0.176
	(0.451)	(0.577)	(0.354)	(0.679)
observations	387	395	387	393
year fixed effect	yes	yes	yes	yes

Column 1 and 2 report the estimated coefficients of the model when using the change of income adequacy as a dependent variable. The interaction term of having a private retirement plan when income is higher after retirement is not significant in both sub-samples. When the income after retirement decreases, having a private retirement plan increases income adequacy mainly for households with a lower income before retirement. Column 3 and 4 report the estimated coefficients of the model when using the

change of financial satisfaction as a dependent variable. Again, the interaction term of having a private retirement plan when income is higher after retirement is not significant in both sub-samples. When the income after retirement decreases, having a private retirement plan increases financial satisfaction mainly for households with a higher income before retirement. Overall, having a private retirement plan reduces the impact of lower income after retirement on the subjective financial well-being, but the effect differs among households with higher and lower income before retirement. For households with a lower income before retirement, the effect is mainly observed in the assessment of the income adequacy; for households with a higher income before retirement, the effect is mainly observed in the satisfaction with the financial situation.

4.3 Robustness Tests

The main analysis is based on the gross household income. We use two different income measures to test the robustness of the main results. First, we use the disposable income, i.e. the income of all household members after deductibles. Second, we use an equivalence measure of household income that takes into account the size of the household. The estimation results with each of these alternative income measures are reported in Table A1 in the Appendix. Using both alternative measures of income does not change the main results qualitatively. Having a private retirement account eliminates the positive positive relationship between income and financial well-being (see the interaction term in Column 1 and 3). The effect is statistically significant for households experience a decrease of income after retirement (see Column 2 and 4).

Private retirement saving plans are by design saving vehicles. Real-estate-ownership can be considered as another form of retirement savings. It can be also considered as a proxy for a higher wealth, since real-estate owners in Switzerland tend to have more wealth than tenants (Ursina Kuhn & Grabka, 2018). In the following we test whether owning real estate when entering retirement eliminates the effect of retirement planning on how financial welfare change with income at the time of retirement. The results of the analysis are presented in Table A2 in the Appendix. The first (second) column reports the results when using financial adequacy (financial satisfaction) as a dependent variable. While having a private retirement plan continues to moderate the effect of income on financial welfare, the moderation effect of owning real estate is statistically not significant.

Having a private retirement plan may affect the effect of income changes after retirement on financial welfare because planning increase the net wealth of households (Ameriks et al., 2003; van Rooij et al., 2012). In the following we test whether having high net wealth (net wealth above the sample median

CHF 200,000) eliminates the effect of retirement planning on how financial welfare change with income at the time of retirement. The results are reported in Table A3 in the Appendix. The first (second) column reports the results when using financial adequacy (financial satisfaction) as a dependent variable. While having a private retirement plan continues to moderate the effect of income on financial welfare, the moderation effect of having high net wealth is statistically not significant. The results remain qualitatively the same when using the average value of net wealth instead of the median as a thresholds or when using the logarithm of net wealth instead of a dichotomous variable for higher respectively lower net wealth.

Having no private pension plan can also reflect an inability to save. To test whether the availability of financial resources is driving our results, we repeat the main analysis but exclude households who state that they do not have a private pension plan because they cannot afford it. The results of this analysis are presented in Table A4 in the Appendix. As in the previous analysis, financial well-being (income adequacy and financial satisfaction) depends on the income, but less so for planners as the interaction effect in columns 1 and 3 suggest. Again, being a planner reduces mainly the negative effect of having lowing income after retirement (see interaction terms in column 2 and 4).

5 Discussion

The goal of this study is to evaluate whether participation in tax-incentivised retirement saving programs have implications for the subjective financial welfare of households after retirement. Using person-by-person comparison, which control for unobserved individual differences that may bias the estimations, this study provides supportive evidence that having a private retirement saving plan limits the impact of income change on the subjective financial welfare of the households after retirement. The moderation effect of having a private retirement plan is particularly strong when income decreases after retirement. Households with a below-average income before retirement benefit most from having a private retirement plan.

The most compelling explanation for these findings is that participation in tax-incentivised retirement saving programs prepares for retirement in the sense that it motivates households to estimate their income after retirement. Without an estimate about how the income will change after retirement without a private retirement plan, it is difficult to assess the benefits of such a plan given that participation in voluntary retirement saving programs costs liquidity during the working period. Having an estimate about how income will change after retirement makes income changes less surprising at the time of retirement. This can explain why such income changes do not affect the subjective financial welfare, which is also

documented empirically (Barrett & Kecmanovic, 2013).

This explanation is further supported by the finding that other benefits of having a private pension plan such as building higher wealth does not eliminate the moderation effect of having a private pension plan as a way to eliminate income surprises after retirement. Also, other forms of preparing for retirement such as owning real estate may increase the wealth, but this effect does not eliminate the moderation effect of entering retirement with a private pension plan. These observations strongly imply that participating in voluntary retirement saving programs is beneficial for households in terms of smoothing the subjective financial welfare when the income as a major driver of the subjective financial welfare drops after retirement.

These results are consistent with findings that income surprises after retirement affect the subjective financial welfare (Barrett & Kecmanovic, 2013). Whereas past research have found that financial planning has direct effect on objective (Ameriks et al., 2003; van Rooij et al., 2012) and subjective measures of financial well-being (Dorfman, 1989; Elder & Rudolph, 1999; Joo & Grable, 2004; Clark et al., 2006; Noone et al., 2009; Woodyard & Robb, 2016), the present study has shown that retirement planning moderate the impact of income on subjective welfare after retirement. This observation contributes to the literature searching for explanations for the weak relationship between income and subjective welfare in particular after retirement (Hira & Mugenda, 1998; Hsieh, 2001; Diener & Biswas-Diener, 2002; Stoller & Stoller, 2003).

One limitation of this study is that the income and wealth data used to assess the financial situation of the households are self-declared. Further research could benefit from using tax record information (official register data) about the economic resources of the households, as this source improves data quality and gives a complete response rate.

A second potential limitation is that the data on participating in voluntary retirement saving programs used in this study is at households level. This prevents investigating important differences in the preparation for retirement depending on gender. Further research could address the question of whether the effect of retirement preparation on well-being smoothing differs between males and females.

Finally, this study investigates only whether participation in voluntary retirement saving programs moderares the effect of income on financial welfare after retirement. It could be interesting to study whether the amount of savings in such vehicles or how regular households contribute to such retirement saving plans have additional effects on how well such plans can smooth the financial welfare after retirement.

Despite the above mentioned limitations, the results in this study suggest several practical impli-

cations and potential interventions. First, the results highlight the importance of voluntary retirement saving programs as a measure that can stimulate retirement planning, which can smooth the subjective welfare in the face of negative income shocks after retirement. This smoothing effect on the subjective welfare is important indicator for the benefits of such tax-incentivised programs that go beyond the wealth that such programs can generate. Second, the results suggests that interventions designed to stimulate participation in tax-incentivised retirement saving programs should target households with below-average income before retirement, since such households benefits most from the retirement planning effect induced by participating in such programs.

6 Conclusion

The present research contributes to a growing body of research on the drivers of subjective financial well-being as a measure of individual financial welfare. Focusing on income as the main driver of subjective financial well-being, this study shows that income shocks after retirement do not affect individual financial welfare if retirement planning supports developing a stronger awareness of the size of such shocks. This reveals a new mechanism of how retirement planning can improve the financial wellbeing of households that widens the perspective of policy makers offering programs for voluntary retirement savings.

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Appendix

Table A1: Effects of disposable and equivalence income on financial welfare

The table reports the results of OLS estimations based on equation (4). All variables are included as differences (d) except the dichotomous variable *planner* that takes the value of 1 if the household has a private retirement plan and 0 otherwise. The variables *d log gross income*>0 and *d log gross income*<0 are specified as in equation (3) and have always positive values. Robust standard errors clustered at the household level are provided in parentheses. ***, ** respectively * indicate significance of the estimated coefficients at 1%, 5%, respectively 10% level.

	income adequacy, d		financial satisfaction, d	
	(1)	(2)	(3)	(4)
planner	-0.260	-0.267	-0.127	-0.217
	(0.159)	(0.169)	(0.141)	(0.151)
d log disposable income>0	0.411		0.104	
	(0.408)		(0.441)	
planner#d log disposable income>0	0.504		0.123	
	(0.546)		(0.549)	
d log disposable income<0	-0.620***		-0.581**	
	(0.230)		(0.277)	
planner#d log disposable income<0	0.624*		0.743**	
	(0.347)		(0.355)	
d log equivalence income>0		0.924*		0.677
		(0.498)		(0.553)
planner#d log equivalence income>0		0.041		-0.142
		(0.691)		(0.666)
d log equivalence income<0		-0.864***		-0.752***
		(0.257)		(0.281)
planner#d log equivalence income<0		0.854**		1.021***
		(0.339)		(0.349)
constant	-0.200	-0.154	-0.399	-0.436
	(0.328)	(0.377)	(0.273)	(0.310)
observations	889	782	889	780
controls	yes	yes	yes	yes
year fixed effect	yes	yes	yes	yes

Table A2: Effect of income on financial welfare conditional on real estate ownership

The table reports the results of OLS estimations based on equation (4). All variables are included as differences (d) except the dichotomous variable *real estate owner* that takes the value of 1 if the household has a private retirement plan and 0 otherwise. The variables *d log gross income*>0 and *d log gross income*<0 are specified as in equation (3) and have always positive values. Robust standard errors clustered at the household level are provided in parentheses. ***, ** respectively * indicate significance of the estimated coefficients at 1%, 5%, respectively 10% level.

	income adequacy, d		financial satisfaction, d	
	(1)	(2)	(3)	(4)
real estate owner	0.136	0.013	-0.144	-0.176
	(0.149)	(0.169)	(0.131)	(0.169)
log gross income	0.446*		0.490*	
	(0.248)		(0.295)	
real estate owner#d log gross income	0.097		-0.317	
	(0.309)		(0.329)	
d log gross income>0		0.087		0.721
		(0.753)		(0.592)
real estate owner#d log gross income>0		0.972		-0.210
		(0.825)		(0.708)
d log gross income<0		-0.510*		-0.449
		(0.279)		(0.369)
real estate owner#d log gross income<0		0.164		0.405
		(0.349)		(0.404)
constant	-0.255	-0.272	-0.378	-0.430
	(0.380)	(0.389)	(0.307)	(0.317)
observations	789	789	787	787
controls	yes	yes	yes	yes
year fixed effects	yes	yes	yes	yes

Table A3: Effects of income on financial welfare conditional on net wealth

The table reports the results of OLS estimations. The estimated coefficients are based on equation (4). All variables are included as differences (d) except the dichotomous variable *high net wealth* that distinguishes between households with a net wealth above and below the median (CHF 150,000) as reported in Table 1. The variables *d log gross income>0* and *d log gross income<0* are specified as in equation (3) and have always positive values. Robust standard errors clustered at the household level are provided in parentheses. ***, ** respectively * indicate significance of the estimated coefficients at 1%, 5%, respectively 10% level.

	income adequacy, d		financial satisfaction, d	
	(1)	(2)	(3)	(4)
high net wealth	0.126	0.037	-0.053	0.010
	(0.153)	(0.185)	(0.132)	(0.171)
log gross income, d	0.481		0.310	
	(0.302)		(0.265)	
high net wealth#log gross income, d	0.015		-0.060	
	(0.340)		(0.331)	
d log gross income> 0		0.442		0.903
		(0.675)		(0.587)
high net wealth#d log gross income> 0		0.623		-0.520
		(0.767)		(0.701)
d log gross income< 0		-0.497		-0.122
		(0.408)		(0.333)
high net wealth#d log gross income< 0		0.165		-0.088
		(0.442)		(0.432)
constant	-0.470	-0.483	-0.462	-0.566
	(0.363)	(0.384)	(0.342)	(0.360)
observations	761	761	759	759
year fixed effects	yes	yes	yes	yes
controls	yes	yes	yes	yes

Table A4: Effects of income on financial welfare excluding non-planners unable to save

The table reports the results of OLS estimations. The estimated coefficients are based on equation (4). All variables are included as differences (d) except the dichotomous variable *planner* that distinguishes between households with and without a private pension plan. The sample exclude non-planners who report having no private pension fund because they cannot afford it. The variables *d log gross income>0* and *d log gross income<0* are specified as in equation (3) and have always positive values. Robust standard errors clustered at the household level are provided in parentheses. ***, ** respectively * indicate significance of the estimated coefficients at 1%, 5%, respectively 10% level.

	income adequacy, d		financial satisfaction, d	
	(1)	(2)	(3)	(4)
planner	-0.188	-0.273	-0.112	-0.184
	(0.146)	(0.169)	(0.121)	(0.148)
log income, d	0.874***		0.733***	
	(0.200)		(0.210)	
planner#d log income	-0.679**		-0.814***	
	(0.293)		(0.268)	
d log income> 0		0.984**		0.718
		(0.439)		(0.537)
planner#d log income> 0		-0.004		-0.261
		(0.651)		(0.653)
d log income< 0		-0.840***		-0.737***
		(0.250)		(0.255)
planner#d log income< 0		0.851**		0.959***
		(0.337)		(0.336)
constant	-0.282	-0.311	-0.282	-0.284
	(0.350)	(0.362)	(0.333)	(0.343)
observations	745	745	742	742
year fixed effects	yes	yes	yes	yes
controls	yes	yes	yes	yes