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DISCUSSION PAPER

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ARE TAX-FAVOURED SAVINGS PLANS EFFECTIVE IN RAISING PRIVATE SAVINGS?

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CONTENTS

ABBREVIATIONS

DB – defined benefit
EU – European Union
EUR – euro
GDP – gross domestic product
HFCS – Household Finance and Consumption Survey
HH – household
IRA – individual retirement account
NDC – notional defined contributions
OECD – Organisation for Economic Co-operation and Development
PAYG – pay as you go
UK – United Kingdom
US – United States of America
vs – versus

ABSTRACT

This study examines the impact of tax-favoured savings on total private savings using data for Latvia contained in HFCS 2014 and 2017. The survey shows that contributions to tax-favoured savings plans are not associated with lower consumer spending and therefore do not contribute to an increase in private savings. Instead, these savings are achieved by lowering other savings. This substitution effect on other savings remains statistically significant even when excluding households with very low consumption levels and the ones whose reference person is relatively young/old and with a low level of education. However, the observed effect is not significant at the very bottom of the distribution of non-favoured savings. Since participation in tax-favoured savings plans is mainly associated with households in the upper income quintile, the results of this study raise concerns that without additional measures to encourage retirement savings, particularly in the lower segment of the savings distribution, income inequality among retirees will continue rising.

Keywords: tax incentives, saving, private pension funds, HFCS

JEL codes: D14, H24, H31, H55

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1. INTRODUCTION

The world's population is ageing, putting pressure on old-age pension systems. In response to this challenge, governments are raising the retirement age and reforming pension systems to make pension benefits less generous. This enhances the role of personal wealth as a source of income after retirement. To stimulate the accumulation of wealth through private savings, governments introduce tax incentives for investment in certain savings plans, such as private pension funds or life insurance schemes. Contributions to such plans are excluded from the person's annual income base, which is subject to personal income tax.

From a theoretical point of view, the effect of these so called tax-favoured savings on total private savings is ambiguous. On the one hand, higher net return on savings (associated with tax relief) encourages economic agents to save more (the substitution effect), as the price of current consumption rises and individuals substitute future consumption for current consumption (i.e. save more). On the other hand, it makes a given wealth accumulation target easier to achieve, weakening the need to save (the income effect). The empirical evidence on the net private savings effect of tax-favoured vehicles is still inconclusive and is mostly limited to US literature, with only a small number of articles available about a few European countries, such as the UK, Italy, Spain and Germany.

In this study, we examine empirical evidence from Latvia. Unlike many other European Union countries, the Latvian pension system is built on three pillars, one of which is a voluntary tax-favoured private pension scheme. Therefore, the present study expands the literature on (the degree of) substitution between tax-favoured and non-tax-favoured savings by examining an EU country that has been at the forefront of introducing private pension schemes in the EU.

Tax-advantaged savings schemes perform well in raising total private savings only in the event that individuals cut back on consumer spending rather than simply change their savings strategy and shift resources from one account to another. To uncover their impact, ideally one needs to be able to observe what households would do in the absence of such schemes, which is obviously impossible. Instead, researchers look for a suitable identification strategy, whereby alternative strategies often lead to opposite conclusions even when applied to the same country.

This study is based on the HFCS, which provides detailed information on real and financial assets, liabilities, income, contributions to tax-favoured plans and consumption of households as well as personal characteristics of the reference person of a household. First, we estimate the impact of tax-favoured savings on non-favoured savings (and consumer spending) using data from the households surveyed in 2017 and applying a conventional comparison of savings (and consumption) of contributors and non-contributors. The identification of the studied effect is provided by the cross-individual differences in observable characteristics. Nevertheless, we admit that applying this approach can lead to inconsistent estimates if there are heterogenous time invariant unobservable factors that influence households' saving decisions. Therefore, following Anton (2014), our second strategy is based on the first-difference estimation using the longitudinal subset of the households surveyed in two different years, i.e. in 2014 and 2017. This approach, in turn, relies on the assumption that there are no time-varying unobservable factors that simultaneously affect all modes of

savings. To our knowledge, it is uncommon in the empirical literature to follow the same households in two or more survey waves in order to infer the savings effect.

The results obtained in the paper suggest that contributions to tax-favoured plans are not associated with lower consumer spending which is a condition for increasing total private savings. Instead, such contributions come from a reshuffle of savings that would have been made anyway. This effect on other modes of savings appears to be robust when excluding households with very low consumption levels as well as dropping households whose reference person is relatively young/old and with low educational attainment. However, the reshuffling effect does not appear to be statistically significant at the very bottom of the distribution of non-favoured savings. The obtained results in general and particularly in the tails should be treated with caution due to the small number of observed contributors.

Although there is no evidence that advantageous tax treatment leads to higher savings rates, such tax reliefs are not necessarily a waste of budgetary resources. Different savings vehicles are used for different purposes. Resources invested in tax-favoured plans are locked and cannot be used until the end of the contract, which helps to safeguard some wealth for more secure retirement. Furthermore, contributions to private pension or life insurance plans that are invested in bonds and stocks and accompanied by tax relief, generate higher net return to savings and raise total net wealth, even if they merely replace other savings. The latter effect should be particularly pronounced in Latvia, where the most significant financial asset class owned by households is deposits[1] with no or a very low return.

To stimulate the accumulation of retirement wealth, a few proposals have been made in the literature. For example, automatic enrolment with the possibility for a saver to opt out has been shown by Choi et al. (2004), Beshears et al. (2008) and Clark and Pelletier (2021) among others to be an effective tool for generating private savings, particularly among young and low-income individuals (Madrian and Shea 2001; Beshears et al. 2016) and those in the lower tail of the savings distribution (Choi et al. 2004), where according to the results of our study there is less evidence of reshuffling.

The rest of the paper is organized as follows. Section 2 provides the background of the study and the review of the relevant literature. Section 3 lays down empirical strategy and describes the dataset used. Section 4 explains the results of the empirical examination. Finally, Section 5 concludes.

2. BACKGROUND OF THE PAPER AND LITERATURE REVIEW

2.1 Latvia's three-pillar old-age pension system: an overview

The Latvian old-age pension system in its current form was established in 1996, when the fragmented DB schemes were abolished. The current system consists of three pillars.

The 1st pillar or the PAYG scheme was introduced in 1996. In comparison to most other countries, PAYG pensions in Latvia are calculated on the basis of mandatory NDCs.[2] Social security contributions paid by employees and employers are recorded

[1] 97% of financial assets apart from private pension and life insurance plans.
[2] Notional accounts exist only in five OECD countries: Latvia, Italy, Norway, Poland and Sweden (OECD 2019)

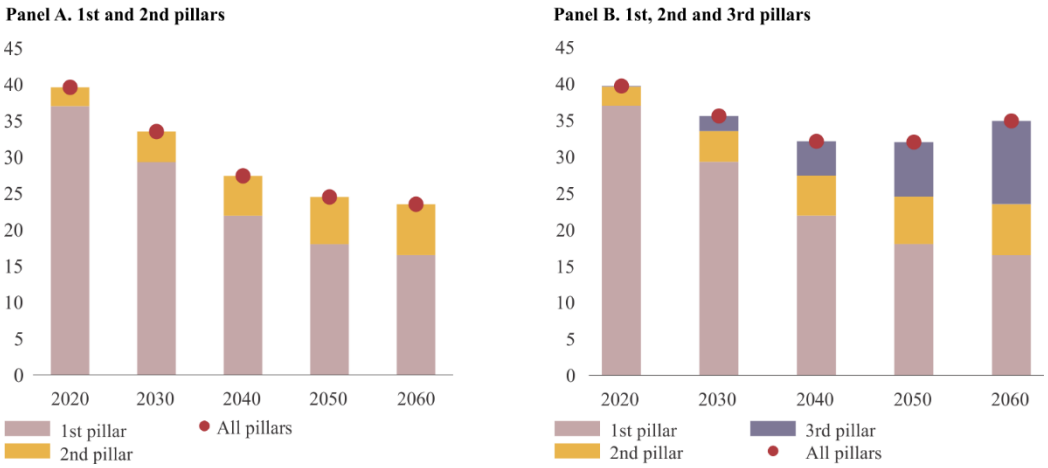
in personal accounts whose values are regularly valorized with a nominal growth in a social security contribution wage base[3] This system not only ensures that the expected pension benefit has a relationship with a person's lifetime earnings, but also takes into account economic and demographic developments.[4] In addition to the PAYG, in order to diversify sources of retirement income, Latvia has two funded pension schemes: the mandatory and the voluntary ones. The mandatory funded pension scheme or the 2nd pillar has been in force since 2001. It is mandatory only to those individuals who were born after 1 July 1971. However, many of those to whom it is optional joined the scheme on a voluntary basis. The pension contribution rate of 20% of gross earnings is currently used to finance both (1st and 2nd) pillars, and it is split into two parts: 14% and 6% accordingly. The split has however varied over time. The part that is used to finance the 2nd pillar attained the maximum of 8% before the economic crisis of 2009–2010, when it was lowered to cover mounting deficit in the social security fund. The 3rd pillar, introduced in 1998, is an optional fully funded scheme, where individuals can choose a private pension fund to invest in. Participation in private pension funds is partly established by employers contributing to an open or closed private pension fund on behalf of their employees. As the system does not have a long history, current pensioners have not really benefited yet from the 2nd or 3rd pillar, with the replacement mostly coming from the 1st pillar.

The demographic dependency ratio[5] in Latvia is expected to double by 2060, reaching one of the worst expected indicators in the EU (European Commission 2018). However, due to the built-in automatic stabilizers that adjust accrued wealth according to economic and demographic developments, the Latvian pension system is expected to stay financially stable, and the Latvian government is not expected to have problems in meeting pension obligations in the future. This financial stability of the pension system will come at a huge cost though, as pension benefits, paid out from the 1st and 2nd pillars, will become less generous (relative generosity of the 2nd pillar may actually increase over time, but it will not outweigh the declining replacement from the 1st pillar). If currently pensioners receive on average 40% of the average salary, then by 2060 the replacement provided by the first two pillars is projected to decrease markedly (see Figure 1). Adverse demographic developments will put Latvia's pensioners in a much worse position as compared to pensioners in the rest of the EU (European Commission 2018).

The role of personal savings to sustain higher rate of replacement has recently been acknowledged by economic experts in Latvia.[6] For example, contributing at least 5% of a salary to a private pension fund may increase the replacement rate by more than 10 percentage points (see Figure 1, panel B).

[3] Valorisation index is a combination of three factors: real wage, the number of contributors and the rate of inflation.
[4] Demographic developments are implicitly incorporated in the valorisation index (affecting the number of contributors) and are also taken into account when a pension benefit is calculated by dividing the accrued pension wealth by the remaining life expectancy in retirement.
[5] Dependency ratio is the ratio of people older than 64 to the working-age population.
[6] https://www.makroekonomika.lv/ekspertu-saruna-pensiju-sistema-latvija-vai-bumba-ar-laika-degli#tab=3

Figure 1
Old-age pension system replacement rate
(% of average wage)



Sources: Latvijas Banka's forecast, https://www.makroekonomika.lv/ekspertu-saruna-pensiju-sistema-latvija-vai-bumba-ar-laika-degli#tab=3

2.2 Tax-favoured savings plans in Latvia

Despite the low and declining replacement rate the Latvian old-age pension system is able to generate, making long-term savings is not popular in Latvia. Over the past 10 years, the gross household savings rate has been fluctuating in the range between –3% and 7% of the disposable income, far below the EU average of 12% (Eurostat[7]).[8] 80% of non-saver respondents claim they do not simply have the means to save. However, it also seems that saving for a large part of the population is not related to something sensible that could be directly related to motivation.[9] Moreover, among savers, only a relatively small part of savings is induced by the retirement motive (Fadejeva et al. 2018).[10] As a result of low savings rate, only 89% of Latvian households hold at least one type of financial assets (including sight deposits) the median value of which is 428 EUR, representing the lowest level in the EU in 2017 (Fadejeva et al. 2020).

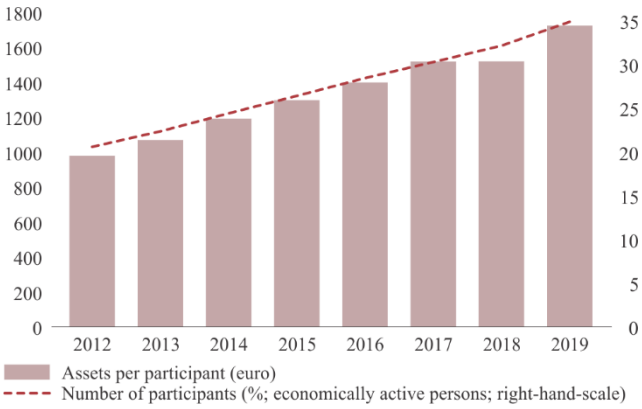
To foster private savings, the Latvian government introduced tax incentives aimed at promoting voluntary participation in private pension schemes and life insurance plans. Contributions to private pension funds, up to the limit of 10% of annual income, are deductible from the personal income tax base. Resources invested in private pension plans are highly illiquid as their withdrawal cannot take place until an individual reaches the age of 55. Upon reaching this age, an individual can receive accrued wealth in one of two ways: a) either as a single payment or b) in the form of regular payments by purchasing life annuity from a life insurance company. Returns on investment in private pension funds are taxed upon withdrawal by a capital gains tax rate of 20% (which is lower as compared to the progressive scale of personal income

[7] https://ec.europa.eu/eurostat/web/products-datasets/-/tec00131.
[8] Bicevska et al. (2009) provides a comprehensive econometric analysis of economic, social and demographic factors that hold back household savings in Latvia.
[9] https://blog.swedbank.lv/uzkrajumi/partikusas-vecumdienas-308.
[10] In 2014, less than 40% of savers mentioned old-age provision as one of the most important reasons to save.

tax rates applied to earnings). Invested amounts are taxed only in cases where they are paid by employers.

Tax incentives for contributions to private pension funds have only partly been successful so far. The number of contributors has been constantly growing however it reached only about 1/3 of economically active persons in 2019 (see Figure 2). Moreover, many contributors are not active (in 2016 only around half of members were active, OECD 2018). Such non-active participants may have invested a certain amount of money one or more times but were inactive in a year of observation. Alternatively, they can be retired persons who stopped contributing and started to receive regular payments. Also, the accumulation of funds has so far been quite modest: in roughly two decades after the system was introduced, by end-2019, private pension funds accumulated assets of around 1.8% of GDP, accounting for close to 1500 EUR per participant. Employer-provided pensions are not particularly widespread: in 2016, participants of occupational plans represented only 16%, and their share in total assets has been on a declining path since 2010.

Figure 2
Number of participants in the 3rd pillar and average asset level per participant



Sources: manapensija.lv, Central Statistical Bureau.

Life insurance policies are another relatively illiquid financial instrument favoured by the tax code and used by both employees and (in several cases) by employers. Similarly to private pension funds, contributions to life insurance plans are tax free (also, up to the level of 10%) with return on investment being taxed upon withdrawal. An early withdrawal is possible at any time[11], but with financial penalty, since the policy holder would have to repay all previously obtained tax refunds.

Total budgetary costs of these two schemes in terms of foregone personal income tax revenue are not particularly high. In 2017, they amounted to approximately 28.2 million EUR (0.1% of GDP).

From 2018, the Latvian government reduced tax incentives for contributions to tax-favoured schemes. Up to the end of 2017, the contribution limit of 10% for tax-favoured contributions was applied separately for these two savings tools, i.e. an individual could claim a tax refund from contributions to both schemes, each up to 10% of annual earnings (i.e. 20% joint contribution limit). In 2018, tax treatment was made less beneficial, particularly for high-income earners, such that currently a 10%

[11] Until 2018, within the period of 10 years, from 2018 – five years.

limit is imposed on the total amount of contributions. Moreover, the government imposed an annual cap of 4000 EUR. Following these changes to personal income tax legislation, Latvian voluntary private pension plans are now in the middle of the range compared to other voluntary arrangements in OECD and EU countries in terms of tax advantage for individuals (OECD 2018). Furthermore, these amendments brought about a marked decline in forgone government budget tax revenue. Budgetary costs decreased from 0.10% of GDP in 2017 to 0.06% of GDP in 2019.

2.3 Tax-favoured vs non-tax-favoured savings schemes: review of literature

Having examined income levels generated by the old-age pension system in Latvia and having described the tax incentives provided by the Latvian government to increase private savings, we turn next to a brief review of relevant literature. This literature studies whether retirement savings policies, such as tax reliefs for certain types of savings, raise the total level of private savings and wealth or merely induce individuals to reshuffle their saving strategy and to substitute from other savings types. Answering this question is not an easy task due to data limitations and econometric problems related to the identification of the effect.

It was shown previously, mostly in the vast US literature examining the effect of tax incentives for IRA and 401(k), that employing an alternative research design (aimed to control for saver heterogeneity) may lead to contradicting results. Most of these studies relied upon: a) between-group comparisons of saving behaviour of eligible vs non-eligible households, assuming that the 401(k) eligibility is exogenous, b) within-group changes by following the same household over time or by constructing the treatment group of households with similar saving propensities and c) the cohort analysis by comparing saving behaviour of individuals of the same age at different points of time. Thus, Venti and Wise (1986, 1990), Poterba et al. (1995, 1996) and Gelber (2011) among others uncovered a positive effect of targeted saving incentives on private savings, implying that tax-favoured contributions represent new savings and are not accompanied by a concomitant reduction in other savings. In contrast, Engen et al. (1994), Gale and Scholz (1994) and Attanasio and De Leire (1994) among others reported virtually no effect on total savings, reflecting savings reshuffling strategy. These and other studies of the voluminous literature on IRA and 401(k) effects were thoroughly reviewed in Poterba and Venti (1996) and Bernheim (2002).

In contrast to the large branch of the US literature, evidence using data from other (a few European) countries is scarce. Changes to the US tax code of the 1980s (including the Tax Reform Act of 1986) represented a large experimental base for flourishing literature, as they allowed for several identification strategies. Tax advantages for certain savings types in Europe are a more recent phenomenon, as private retirement schemes in most European countries were established in the recent past. Also, data availability has not been satisfactory until recently. Notwithstanding, the existing scarce literature that uses data for European countries finds a very limited effect of tax incentives on savings.

Corneo et al. (2009, 2010) shed some light on the effectiveness of the saving incentive programme (the Riester scheme) in Germany. They conduct a comprehensive treatment analysis and present a negligible effect of the programme on household savings. Participation in the Riester scheme merely induces private households to reshuffle their saving strategy and reallocate some of the savings (that would have been implemented anyway) to the tax-favoured savings vehicle.

On the contrary, the empirical evidence from the British Household Survey has been mixed. Guariglia and Markose (2000) argue that tax-favoured and non-favoured savings are conducted for different reasons, i.e. with, respectively, retirement vs precautionary motives in mind. Therefore, they do not offset each other completely and a tax advantage scheme is able to generate new savings. Similarly, Rossi (2009) reports the absence of the crowding-out effect of the contributions to personal pension plans on other savings of British households. Moreover, Rossi (2009) shows that private pension funds tend to enhance other forms of savings. Attanasio et al. (2004) disagrees and claims that the extent of new savings in the UK generated by tax-favoured programmes has been rather limited.

There are also a few studies that investigate the effect of supplementary pension provision in Spain. Anton et al. (2014) infer the impact of tax incentives on household and national savings using a longitudinal survey in Spain and the fixed effects technique. It suggests that after time invariant unobservable factors are controlled for, contributions to private pension funds do not appear to raise national savings, but are at least effective in increasing private savings. Ayuso et al. (2019) in their most recent paper on this issue also use Spanish data and employ an alternative instrumental variable approach to solving the omitted variable problem. They suggest that there is a large heterogeneity in the response of households to tax incentives, as saving behaviour depends on the age group. A somewhat larger displacement effect is found for the group of individuals that is closer to the retirement age. Individuals in that age group may treat supplementary pension schemes and other savings forms as close substitutes, because for them retirement motives correspond to the precautionary ones and the illiquidity concern is far less important. Finally, for Italy, Paiella and Tiseno (2014) found a substantial substitution of non-tax-favoured wealth for tax-favoured pension assets. They also showed that the effect on non-favoured savings flows is negligible.

3. EMPIRICAL STRATEGY AND DATA DESCRIPTION

3.1 Methodology

In order to examine the effect of tax incentives on private savings, we use a representative sample of Latvian households from the HFCS waves in 2014 and 2017 and compare two groups of households: the one that contributes to tax-favoured savings plans and the one that does not. For this purpose, we follow Anton et al. (2014) and regress non-favoured savings and consumption on a set of household characteristics using a sample of both contributors and non-contributors. We measure contribution as a household's monthly payment into either a private pension fund or a life insurance scheme. We estimate savings and consumption regressions using a) cross-section data for 2017 and b) longitudinal dataset that comprises data for 2014 and 2017. The latter approach allows controlling for unobserved time-invariant characteristics.

Cross-section estimation

We estimate two sets of regressions. In the first one, we assess whether households that contribute to tax-favoured savings plans exhibit smaller savings in all other forms, with other factors being equal:

$$S_i = \alpha_0 + \alpha_1 P_i + \alpha_2 M_i + \alpha_3 N_i + \alpha_4 A_i + \alpha_5 I_i + \alpha_6 D_i + \sum_{k=1} \beta_k Z_{jk} + u_i \qquad (1)$$

where S_i denotes non-favoured savings of the household i, P_i are contributions to tax-favoured plans (private pension plans and/or life insurance schemes), M_i and N_i stand for mortgage and non-mortgage debt payments respectively, A_i denotes total real assets, I_i is net of tax monthly income, D_i is a household's indebtedness level (total outstanding balance of a household's liabilities). Z_{jk} denotes k different personal characteristics of the household's i reference person j. These characteristics are: labour status, gender, age, education, the number of household members, region, income expectations, risk assessment and an indicator characterizing the household's behaviour in the case of windfall revenue (precise definition of the characteristics included is presented in Table A3 together with detailed estimation results in the Appendix). ui is a household specific residual.

In the second set of regressions, we estimate regression (1) by substituting consumption expenditure C_i for other non-favoured savings S_i. C_i and S_i are linked by the accounting identity, so that a rise in P_i, with all other spending components being equal, may be accomplished by either reducing C_i or S_i:

$$S_i + C_i = I_i - M_i - N_i - P_i \quad (2).$$

Thus, running two sets of regressions allows examining both the consumption and savings behaviour of contributors vs non-contributors. In the first set, under the null hypothesis the effect on other savings is not statistically different from zero, hence tax incentives represent new savings and contributors do not finance their contributions from other savings that would otherwise have been done. In the second set, the null hypothesis states that tax incentives have no effect on consumption expenditure and merely induce reshuffling of the savings strategy. The outcome may be somewhere in between if households partly offset other savings, while sacrificing part of the current consumption.

To check the validity of estimates, these two regression types can be seen as a mirror image of one another. It is possible that the data on other savings contain a measurement error that may reduce the power of the coefficient test when other savings are used as dependent variable. For both sets we also employ quantile estimation to examine whether the effect varies across the distribution of the dependent variable. For example, households with a very low level of savings may not be able to offset contributions by reducing other types of savings. Therefore, the estimation results may differ at the different points of the distribution.

The identification of the offset is provided by cross-individual differences in the observable characteristics. The key assumptions we rely upon are the exogeneity of contributions with respect to saving decisions. However, the estimates obtained in this way may be biased if some unobservable characteristics affect both types of savings. To address household heterogeneity that may result, for instance, from the different preferences for savings, we should ideally employ an instrumental variable approach. However, finding an instrument with the strong effect on contributions to tax-favoured vehicles without affecting savings using other schemes is difficult (see Anton (2014) for discussion). There have been no changes to eligibility or any other reforms of the tax legislation over the period of 2014–2017 that would contribute to identifying the effect.

First-difference estimation

In this study, we benefit from the fact that the dataset includes a number of households[12] interviewed in both HFCS waves, i.e. in 2014 and 2017. Therefore, we can construct a longitudinal subset of the dataset. This allows accounting for the presence of time-invariant unobserved factors that may simultaneously affect savings in both tax-favoured and unfavoured plans and lead to inconsistent estimates in the cross-section. Employing first-differencing (which in a panel consisting of two periods is identical to the fixed-effect estimation) allows removing such time-invariant unobserved heterogeneity, leading to more precise identification of the casual effect. Unfortunately, this approach is unable to remove the effect of time varying unobserved heterogeneity, such as possible shifts in the preferences for savings or changes in risk perception. However, in our opinion, such shifts are not very likely to occur over a relatively short period of time. This is our key identifying assumption. Therefore, identification here is provided by both cross-individual differences in time-varying observable characteristics and time-invariant unobservables.

We estimate the following equation:

$$\Delta S_i(\Delta C_i) = \alpha_0 + \alpha_1 \Delta P_i + \alpha_2 \Delta I_i + \alpha_2 \Delta M_i + \alpha_3 \Delta N_i + \alpha_4 I_{i,2017} + \alpha_5 M_{i,2017} + \\ + \alpha_6 N_{i,2017} + \alpha_7 A_{i,2017} + \alpha_8 D_{i,2017} + \sum_{k=1} \beta_k Z_{jk,2017} + u_i \quad (3)$$

where Δ symbol stands for a change in the corresponding indicator between 2014 and 2017. To control for the household's level of income, assets and liabilities in 2017, variables on the level of gross income $I_{i,2017}$, mortgage debt payments $M_{i,2017}$, non-mortgage debt payments $N_{i,2017}$, total real assets $A_{i,2017}$ and total outstanding liabilities $D_{i,2017}$ as well as personal characteristics $Z_{j,2017}$ are included.

When estimating equations (1) and (3), we drop the observations whose dependent variable is below the 1st percentile or above the 99th percentile to get rid of the outliers in consumption and savings. Personal characteristics are added one by one.

It is possible that those who start contributing to tax-favoured plans (at least in an earlier stage) reshuffle their accrued assets followed by changes to saving/consumption patterns at a later stage. To test for this possibility, we should employ data on stocks of financial assets and run a regression with non-pension assets (and/or changes in their value) being a dependent variable. However, we note several problems with the data on financial assets in the HFCS. First, administrative data for financial assets (except for private pension and life insurance) was not available in 2014 and 2017.[13] Information on financial asset stock is self-reported by households and therefore is likely to be underreported.[14] Second, an individual's wealth reflects past decisions and events quite distant in time. Moreover, new contributors may not have any accrued assets to reshuffle or they could simply refuse to do so, because non-favoured assets are more liquid than private pension funds or life insurance schemes.

[12] We refer to them as panel households in the text.
[13] In HFCS 2020, administrative data on financial assets will be available for Latvia.
[14] Bernheim (2002) pointed out that it is a well-known fact that asset values are measured with an error.

3.2 Data description

The study is based on the information obtained from the HFCS of Latvian households carried out in 2014 and 2017.[15] The HFCS is a unique survey conducted by central banks of the Eurosystem aimed at measuring households' net wealth and income.[16] It contains detailed information on real and financial assets (such as deposits, holdings of stocks and bonds), liabilities, income and consumption of households. Information on liabilities (mortgage and non-mortgage debt and payments), all types of income and real estate in Latvia is cross-checked using data from administrative sources. Information regarding voluntary participation in and contributions towards tax-favoured savings plans (private pension and life insurance schemes) is also part of the survey. Unfortunately, corresponding administrative data are not available for 2014 therefore the information for this year is entirely based on answers to the survey and is not cross-checked. To examine whether the use of administrative data in 2017 affects the distribution of contributions to tax-favoured savings plans, we compare the corresponding payments as reported by the respondents themselves and those obtained from the administrative sources. The comparison of contributions indicates that the distributions are similar (see Figure A1 in the Appendix) for both the full set of HFCS 2017 data and the subset of those households (panel households) that are present in both waves and are therefore employed in the first-difference estimation.[17]

Among the households surveyed in the HFCS 2017, 27.4% participated in tax-favoured plans and only 12.2% of households, i.e. only half of all households with open accounts, had non-zero contributions (see Table 1). This is broadly in line with the OECD (2018) observation that only about half of Latvian private pension plan participants in Latvia are active contributors. The lack of administrative data for 2014 explains the much lower reported participation rate of households in tax-favoured plans in HFCS 2014 as compared to HFCS 2017 (see Table 1). In fact, in 2014, participation is registered only for those individuals who made contributions in that particular year, while those who had opened tax-favoured savings plans but did not make contributions were not counted as contributors.[18] It should be noted though that the fact that participation of non-contributors was not recorded in 2014 does not affect the dataset construction. In both cases (the case of non-participation and the case of zero contributions), payments towards the tax-favoured savings scheme are set to zero.

The HFCS questionnaire also contains information on expectations of a household and its willingness to take risk. Respondents provide answers regarding their expectations about the size of the future pension as the share of current income (i.e. the expected replacement rate), expectations of the level of future income and the expected value of the owned real estate. Respondents are also asked to allocate unexpected windfall income from a lottery winning between consumption and income that reflects their propensity to consume out of extra euro of income. These qualitative

[15] For details on HFCS results in Latvia, see Fadejeva et al. (2018) and Fadejeva et al. (2020).
[16] For details on HFCS network, see https://www.ecb.europa.eu/pub/economic-research/research-networks/html/researcher_hfcn.en.html.
[17] The differences in respective contributions for the longitudinal subset are confirmed by the results of the Kolmogorov-Smirnov test (available upon request).
[18] The process of opening a tax-favoured savings account in Latvia is very simple. Such accounts can often be opened as a result of persuasion from the bank's clerk or as a package deal while signing up for other bank products, i.e. taking a mortgage. Payments are voluntary without any schedule enforced.

questions are used in the regressions to control for personal characteristics of a household in addition to the age and education level of a household's reference person.

Table 1

Participation and contribution to voluntary private pension and life insurance plans: HFCS and administrative data

	2014	2017
Participation; %		
HFCS, households	8.9	27.4
Administrative data, the number of persons participating over population aged 16–64 (voluntary private pensions)	16.6	20.9
Participation; % (conditional on non-zero contributions)		
HFCS, households	8.9	12.2

Sources: HFCS Latvia 2014, HFCS Latvia 2017, www.manapensija.lv for administrative data.
Note. HFCS data are weighted to reflect the overall household structure in Latvia.

3.3 Descriptive statistics

The cross-section estimation is based on the full sample of households available in the HFCS (1249 households in 2017). Participation in voluntary private pension and life insurance plans is higher for households with higher income and households in which the reference person is in the middle age group (35–44 years) or has received tertiary education (see Table 2). We do not document participation of any household whose income falls below the 20th percentile of income distributions, while participation in the second quantile is registered for only 1.5% of households.

The median share of net income that households contributed to the plans was 2% in 2014 and 3.6% in 2017. Households in the lower income quintiles and with a reference person over 55 years of age contribute, on average, a higher share of their net income towards tax-favoured savings. For households in the lower income quintiles, this phenomenon can be partly explained by the small number of observations. In addition to this, the share of households that are part of the shadow economy is likely higher in low income quintiles, resulting in a higher contribution rate. For persons that are at least 55 years of age, financial penalty is applied if pension contributions are withdrawn over quite a short two-year period, raising net return to savings in private pension funds. Also, individuals closer to the retirement age tend to report savings for old age as the main reason for saving (see Fadejeva et al. 2020), which implies allocating a larger share of current income to tax-favoured plans. As shown by Ayuso et al. (2019) in Spain, older individuals may consider supplementary pension schemes and other forms of savings as close substitutes, since for them retirement and precautionary motives correspond, and the problem of illiquidity is much less important.

The first-difference estimations are based on the data from the subset of 668 Latvian households that participated in both waves of the HFCS. Among the households that made a non-zero contribution in 2014, around 42% continued doing so in 2017. In turn, in 2017, around 60% of households that made a non-zero contribution did not participate in HFCS 2014. In this smaller subset, statistics on both participation rates and mean payments by income, age and education are broadly consistent with those contained in the full dataset (compare Table A1 in the Appendix and Table 2). Furthermore, the structure of households by various characteristics (e.g. household

size, income quintile, age, education level, employment status of a household's reference person or region) is comparable in the full sample vs the panel sub-sample (see Table A2 in the Appendix).[19] Thus, the results of first-difference estimation obtained using the panel sub-sample can be considered as representative.

Table 2

Participation and mean of tax-favoured savings contribution in 2014 and 2017 (conditional on participation and non-zero contributions)

	Participation and mean of tax-favoured pension contribution						Median % of monthly payment share in net income of HH	
	Participation (%)		Mean monthly contribution (EUR)		Standard error of mean (EUR)			
	2014	2017	2014	2017	2014	2017	2014	2017
Total	8.9	12.2	47.0	69.0	4.3	6.0	2.0	3.6
HH gross income quintile								
Q1	–	–	–	–	–	–	–	–
Q2	4.2	1.5	55.5	42.1	21.9	9.6	8.8	12.5
Q3	4.3	10.7	39.5	31.7	20.8	4.6	1.9	4.3
Q4	11.2	16.1	33.7	50.1	8.2	6.6	1.9	3.8
Q5	24.9	32.9	53.3	91.8	5.3	9.3	1.7	2.7
Age of HH reference person								
16–34	6.8	15.8	50.0	48.3	15.7	7.5	1.3	3.1
35–44	19.5	21.2	58.7	83.2	7.8	17.6	2.8	3.7
45–54	11.5	15.7	32.0	58.8	5.9	10.5	2.1	3.1
55–64	10.6	11.6	41.1	68.3	9.1	7.6	1.4	4.2
65+	0.4	3.6	59.0	85.5	11.8	14.9	2.4	5.1
Education of HH reference person								
Primary	1.4	5.1	16.6	72.2	4.6	10.7	0.8	5.2
Secondary	5.9	9.2	21.1	44.8	3.1	4.7	1.4	3.4
Tertiary	17.7	20.6	61.5	86.6	5.8	9.6	2.5	3.5

Source: authors' estimations using information about panel households in the two HFCS waves for Latvia (HFCS 2014 and HFCS 2017). Data are weighted to reflect the overall household structure in Latvia.

4. EMPIRICAL FINDINGS

4.1 Evidence from cross-section estimation

We estimate equations (1) and (3) using the data from HFCS 2017.[20] Several control variables (personal characteristics of the reference person) are sequentially added to the regression equations. Table 3 reports the estimation results of the key coefficient that relates contributions to the tax-favoured savings schemes and a) non-favoured savings (panel A), b) consumption expenditure (panel B). Full results of the savings

[19] The only difference in the panel and full sample in both 2014 and 2017 is a higher share of households with an older-age reference person and therefore higher share of households with a retired reference person.

[20] We also conducted identical cross-section estimations using the data from HFCS 2014 and obtained qualitatively similar results. These are available in Table A4 in the Appendix.

regressions (i.e. those documented in Panel A) are available in Table A3 in the Appendix.[21]

The estimates indicate that households with higher contributions to tax-favoured plans exhibit smaller non-favoured savings, i.e. such contributions are made at the expense of other types of savings. Thus, in the most detailed specification, a household with monthly contributions to tax-favoured plans of 100 EUR lowers other savings by 61.4 EUR. Moreover, one cannot reject the null hypothesis that the coefficient of interest is equal to –1, thus a complete displacement between the two types of savings cannot be ruled out. Consistently with this finding, we also document that consumption does not statistically differ between households with high vs low/no contributions to tax-favoured schemes. The coefficient of interest is positive and close to the amount of the tax refund for each invested euro (0.2), albeit is not statistically significant.

Table 3

Estimates of the displacement effect on non-tax-favoured savings and consumption in the cross-section setup

Dependent variable Indicator	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**
Panel A. Other savings									
Contribution to tax-favoured plans	–0.756***	–0.756***	–0.793***	–0.763***	–0.818***	–0.685***	–0.666***	–0.669***	–0.614***
Wald test, p-value (H0: contribution to tax-favoured plans = –1)	0.271	0.272	0.369	0.299	0.429	0.159	0.149	0.132	0.081
Number of observations	1057	1057	1057	1057	1057	1057	1041	1041	1013
R2	0.763	0.763	0.771	0.773	0.778	0.793	0.791	0.792	0.792
Panel B. Consumption									
Contribution to tax-favoured plans	0.264	0.264	0.294	0.265	0.328*	0.247	0.252	0.226	0.175
Number of observations	1051	1051	1051	1051	1051	1051	1035	1035	1006
R2	0.387	0.388	0.402	0.411	0.448	0.498	0.497	0.501	0.504
Additional control	Labour status	+ Gender	+ Age	+ Education	+ Number of HH members	+ Region	+ Income expectations	+ Risk assessment	+ Windfall

Notes. * indicates significance at a 10% level, ** indicates significance at a 5% level, *** indicates significance at a 1% level. Statistical inference is based on robust standard errors. The sample covers all households surveyed in HFCS 2017, excluding those whose dependent variable (non-tax favoured savings and consumption respectively) is outside the range between the 1st and the 99th percentile. The null of the Wald test suggests that the displacement coefficient on non-tax-favoured savings is equal to –1.

Overall, the results suggest that extra savings in private pension funds and life insurance schemes do not result in new savings of a household, which is merely reshuffling its saving strategy, while the tax refund provided by government may be used to increase consumer spending.

4.2 Evidence from the first-difference estimation

The results obtained from saving/consumption regressions in the cross-section setup may suffer from endogeneity between contributions to tax-favoured plans and other savings/consumption. However, if this were the case, we would probably expect a

[21] Detailed outcome tables for all other regression estimates of this study for the sake of brevity are available upon request.

positive coefficient linking contributions to the tax-favoured and other savings (and negative for consumption), as households with stronger taste for savings would tend to save more using both tools as compared to households that heavily discount future consumption.

Nevertheless, since this bias may still be present (and be responsible for the drift of point estimates presented in Panel A of Table 3 away from –1), leading to inconsistent coefficient estimates, we employ an alternative approach. As explained above, we focus on the households present in both waves of the HFCS which allows us to employ the longitudinal dataset and estimate regressions using household-specific differences in savings and consumption between 2014 and 2017. Thus, we filter out time-invariant unobserved characteristics, such as tastes for savings, attitude towards risk, etc. Still, however, we are unable to control for the possibility that the same person/household may experience a shift in savings taste (or any other unobservable variable that simultaneously affects both savings types) over time. We find it though unlikely that such a shift could have occurred over the three-year horizon, which in our case is a time period with no significant macroeconomic shocks that could potentially shift the saving paradigm of Latvian households.

Although we are not able to test whether unobserved tastes for savings changed, we can examine the developments in savings rates across the two groups of households: those that did not contribute in 2014 and started contributing in 2017 (i.e. new contributors) and those that did not contribute in both years. We find that the median decline in savings rates in both groups was 0.089 and 0.084 respectively, implying that at least the observable taste for savings has evolved similarly.

Focusing on those households that participated in both survey waves filters out a half of the observations we were able to work with in the cross-section. The estimation results using this smaller subset are displayed in Table 4. They are consistent with the estimates obtained previously. The null hypothesis that contributions to tax-favoured plans do not affect other types of savings hence represents that new savings can be safely rejected. Moreover, the value of the displacement coefficient gets even closer to –1 therefore we cannot reject the null of –1 at a higher level of significance than in the cross-section (probably due to the above-discussed negative bias in the cross-section).

For both the cross-section and the first-difference estimation, the following additional exercise was performed. The contribution variable was replaced by the binary dummy (in the cross-section equal to 1 if a household participates in either of the tax-favoured plans; in the first-difference estimation equal to 1 if a non-participant household switches to participation over the three-year period). The impact of this binary variable on non-favoured savings is negative and is statistically significant. The results indicate that the difference in non-favoured savings of contributors vs non-contributors is 57.45 EUR in the cross-section and 64.88 EUR in the longitudinal dataset. This amount is close to the median level of contributions (see Table 2).

Table 4
Estimates of the displacement effect on non-tax-favoured savings and consumption in the longitudinal setup

Dependent variable Indicator	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**
Change in non-tax-favoured savings									
Change in contribution to tax-favoured plans	–0.962***	–0.961***	–0.952***	–0.959***	–0.921***	–0.840***	–0.800***	–0.829***	–0.928***
Wald test, p-value (= –1)	0.862	0.860	0.829	0.855	0.723	0.473	0.438	0.516	0.774
Number of observations	534	534	534	534	534	534	525	525	510
R2	0.739	0.739	0.739	0.741	0.746	0.751	0.752	0.753	0.760
Change in consumption									
Change in contribution to tax-favoured plans	0.102	0.102	0.104	0.0989	0.0600	–0.0409	–0.0218	–0.0199	–0.0287
Number of observations	542	542	542	542	542	542	533	533	518
R2	0.079	0.079	0.082	0.086	0.111	0.135	0.141	0.142	0.145
Additional control	Labour status	+ Gender	+ Age	+ Education	+ Number of HH members	+ Region	+ Income expectations	+ Risk assessment	+ Windfall

Notes. * indicates significance at a 10% level, ** indicates significance at a 5% level, *** indicates significance at a 1% level. Statistical inference is based on robust standard errors. The sample covers only the households surveyed in both HFCS 2014 and 2017. It excludes those whose dependent variable (change in non-tax-favoured savings and change in consumption respectively) is outside the range between the 1st and the 99th percentile. The estimation is based on first differences. The null of the Wald test suggests that the displacement coefficient on the change in non-tax-favoured savings is equal to –1.

4.3 Quantile estimation

Next, we employ quantile regressions to investigate whether the displacement effect uncovered above varies across the distribution of the dependent variable, i.e. non-favoured savings and consumption. Table 5 reports the estimation results when non-favoured savings are employed as the dependent variable (see the results for consumption in Table A5 in the Appendix). It shows that for other savings the estimated coefficients are all negative and mostly statistically significant, irrespective of whether these estimates are at the top, bottom or median of distribution. However, the magnitude of the estimated offset seems to be somewhat larger and exhibit a higher level of significance (especially for the first-difference estimation) in the third quartile (75th percentile) and the median as compared to the first quartile (25th percentile).

This result is illustrated in Figure 3 and demonstrates heterogeneity of the displacement effect across the deciles of the distribution. In fact, the effect does not appear statistically significant at the very bottom of the distribution, as standard errors of the estimates are particularly high for the very low levels of non-favoured savings.

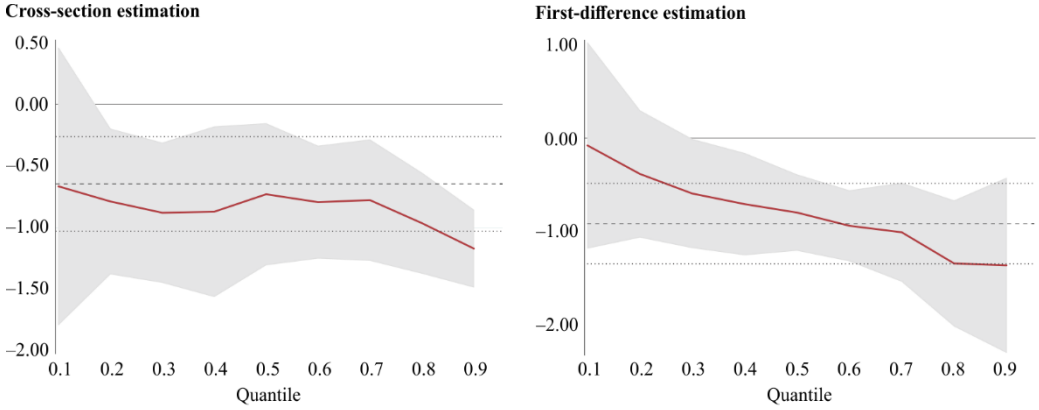
This result implies that the displacement effect is more pronounced for households with abundant resources for reshuffling. It does not automatically follow however that those with very small savings generate new savings when they start contributing. This result may also stem from a small sample size we deal with in our analysis and a low number of contributing households with non-favoured savings at the very bottom of the distribution.

Table 5
Estimates across the distribution of non-tax-favoured savings (in the 25th, 75th and 75th percentiles)

Estimation procedure Indicator	I	II	III	IV	V	VI	VII	VIII	IX
Cross-section estimation									
Contribution to tax-favoured plans (P25)	–0.703**	–0.699**	–0.822**	–0.785**	–0.837**	–0.753**	–0.793**	–0.818**	–0.745**
R2	0.394	0.394	0.406	0.409	0.421	0.441	0.440	0.442	0.439
Contribution to tax-favoured plans (P50)	–0.977***	–0.977***	–1.024***	–1.030***	–1.027***	–0.853***	–0.934***	–0.840***	–0.754***
R2	0.538	0.538	0.548	0.550	0.557	0.576	0.575	0.576	0.575
Contribution to tax-favoured plans (P75)	–1.121***	–1.093***	–1.012***	–0.977***	–1.004***	–0.882***	–0.856***	–0.796***	–0.771***
R2	0.656	0.656	0.663	0.665	0.672	0.683	0.683	0.685	0.687
First-difference estimation									
Change in contribution to tax-favoured plans (P25)	–0.605*	–0.593	–0.622*	–0.619*	–0.894**	–0.715*	–0.661*	–0.694**	–0.678*
R2	0.554	0.554	0.555	0.557	0.562	0.571	0.573	0.574	0.580
Change in contribution to tax-favoured plans (P50)	–0.976***	–1.012***	–1.070***	–1.022***	–0.942***	–0.968***	–0.968***	–0.845***	–0.798***
R2	0.523	0.523	0.524	0.524	0.525	0.532	0.533	0.534	0.540
Change in contribution to tax-favoured plans (P75)	–1.207***	–1.185***	–1.131***	–1.139***	–1.160***	–1.100***	–1.061***	–1.042***	–0.971***
R2	0.525	0.526	0.526	0.527	0.531	0.531	0.532	0.532	0.540
Additional control	Labour status	+ Gender	+ Age	+ Education	+ Number of HH members	+ Region	+ Income expectations	+ Risk assessment	+ Windfall

Notes. * indicates significance at a 10% level, ** indicates significance at a 5% level, *** indicates significance at a 1% level. Statistical inference is based on robust standard errors. The dependent variable is non-tax-favoured savings (upper panel) and change in non-tax-favoured savings (lower panel). In both panels, households whose dependent variable is outside the range between the 1st and the 99th percentile are excluded. In the lower panel, the sample covers only the households surveyed in both HFCS 2014 and 2017. The estimation in the lower panel is based on first differences.

Figure 3
Estimate of the displacement effect on non-tax-favoured savings across its distribution



Notes. The black line is the displacement coefficient, the grey shaded area is the 95% confidence interval.

4.4 Robustness exercise

Next, we test the robustness of our estimates.

The estimates presented above may suffer from heterogeneity, as monetary variables included in equations (1) and (3) are represented in levels (EUR), thus assigning larger weight to households with higher income. To test the robustness of the baseline estimates, we perform the above analysis by relating non-tax-favoured savings to contributions to tax-favoured savings plans in terms of ratios to net income. The results reported in Table 6 imply that contributions to tax-favoured savings plans indeed crowd out other savings.

Table 6
Estimates of the displacement effect on the ratio of non-tax-favoured savings to income

Estimation procedure Indicator	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**
Cross-section estimation									
Ratio of contributions to tax-favoured plans to net income	–0.967***	–0.967***	–1.162***	–1.118***	–1.158***	–0.973***	–0.971***	–0.928***	–0.911***
Number of observations	1050	1050	1050	1050	1050	1050	1034	1034	1006
R2	0.443	0.443	0.458	0.459	0.463	0.487	0.488	0.489	0.487
First-difference estimation									
Change in the ratio of contributions to tax-favoured plans to net income	–1.052***	–1.064***	–1.026***	–1.037***	–0.960**	–0.801*	–0.801*	–0.839*	–1.004**
Number of observations	554	554	554	554	554	554	545	545	529
R2	0.315	0.315	0.320	0.323	0.331	0.337	0.341	0.342	0.347
Additional control	Labour status	+ Gender	+ Age	+ Educa-tion	+ Number of HH members	+ Region	+ Income expecta-tions	+ Risk assess-ment	+ Windfall

Notes. * indicates significance at a 10% level, ** indicates significance at a 5% level, *** indicates significance at a 1% level. Statistical inference is based on robust standard errors. The dependent variable is the ratio of non-tax-favoured savings (upper panel) and change in the ratio of non-tax-favoured savings (lower panel). In the upper panel, the sample covers all households surveyed in HFCS 2017, excluding those whose dependent variable is outside the range between the 1st and the 99th percentile. In the lower panel, the sample covers only the households surveyed in both HFCS 2014 and 2017, excluding those whose dependent variable is outside the range between the 1st and the 99th percentile.

Contributions to tax-favoured savings plans generate new private savings only if households concomitantly reduce their consumption. While this is a possibility for those whose consumption is relatively high, there is a group of households that barely makes ends meet. Reducing the already very low level of consumption spending is not feasible. Their inclusion in the sample may bias the results towards obtaining the full reshuffling. Therefore, we re-estimate our model for a smaller group of households, whose consumption is above the median level of the generalized disposable income.[22] Although the number of observations falls by one third, there are no qualitative changes to the estimation results (see Table 7). Although in the cross-section setup we can reject the null of –1 at least at a 10% level in four most detailed regressions, in the longitudinal framework we cannot reject it in any of the specifications.

[22] It divides households into two equal parts: those earning less than the median household income and those earning more.

Finally, we narrow down our sample further by dropping households with the reference person aged below 35 or above 64 years of age as well as the reference person whose level of education is basic. As mentioned above, saving motives of young individuals can markedly differ from those applied by people who are close to retirement. Similarly, persons with a low level of obtained education may be unaware of income replacement risks after retirement. Thus, these groups of individuals are potentially more likely to be subject to displacement. However, the estimation results presented in Table 8 provide unambiguous evidence in favour of reshuffling in this much smaller sample of households, thus confirming our baseline results.

Table 7

Robustness to dropping households with consumption below median of the disposable income (impact on non-tax-favoured savings)

Estimation procedure Indicator	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**
Cross-section estimation									
Contribution to tax-favoured plans	–0.656***	–0.658***	–0.672***	–0.653***	–0.685***	–0.576**	–0.558**	–0.573**	–0.517**
Wald test, p-value (= –1)	0.125	0.128	0.151	0.129	0.171	0.059	0.052	0.058	0.033
Number of observations	767	767	767	767	767	767	753	753	731
R2	0.773	0.773	0.777	0.778	0.780	0.791	0.788	0.790	0.790
First-difference estimation									
Change in contribution to tax-favoured plans	–0.810***	–0.805***	–0.782***	–0.783***	–0.743***	–0.671***	–0.603**	–0.630**	–0.736***
Wald test, p-value (= –1)	0.414	0.407	0.360	0.363	0.268	0.158	0.135	0.168	0.286
Number of observations	387	387	387	387	387	387	380	380	368
R2	0.740	0.740	0.742	0.742	0.747	0.751	0.752	0.753	0.762
Additional control	Labour status	+ Gender	+ Age	+ Education	+ No of HH members	+ Region	+ Income expectations	+ Risk assessment	+ Windfall

Notes. * indicates significance at a 10% level, ** indicates significance at a 5% level, *** indicates significance at a 1% level. Statistical inference is based on robust standard errors. The dependent variable is non-tax-favoured savings (upper panel) and change in non-tax-favoured savings (lower panel). In the upper panel, the sample covers all households surveyed in HFCS 2017, excluding those whose dependent variable is outside the range between the 1st and the 99th percentile. The null of the Wald test suggests that the displacement coefficient on non-tax-favoured savings is equal to –1. In the lower panel, the sample covers only the households surveyed in both HFCS 2014 and 2017, excluding those whose dependent variable is outside the range between the 1st and the 99th percentile. The Wald test suggests that the displacement coefficient on the change in non-tax- favoured savings is equal to –1.

Table 8

Robustness to dropping households with consumption below median of the disposable income as well as young/old/uneducated (impact on non-tax-favoured savings)

Estimation procedure Indicator	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**
Cross-section estimation									
Tax-favoured plans	–0.794***	–0.797***	–0.771***	–0.748**	–0.757**	–0.640**	–0.636**	–0.721**	–0.619**
Wald test, p-value (= –1)	0.472	0.479	0.434	0.388	0.415	0.228	0.233	0.348	0.211
Number of observations	516	516	516	516	516	516	504	504	488
R2	0.758	0.758	0.763	0.763	0.765	0.776	0.774	0.777	0.778
First-difference estimation									
Tax-favoured plans	–0.932***	–0.932***	–0.930***	–0.931***	–0.859***	–0.771***	–0.786**	–0.893**	–1.051***
Wald test, p-value (= –1)	0.810	0.811	0.806	0.807	0.605	0.410	0.522	0.759	0.869
Number of observations	268	268	268	268	268	268	262	262	254
R2	0.730	0.730	0.731	0.731	0.743	0.749	0.752	0.755	0.765
Additional control	Labour status	+ Gender	+ Age	+ Education	+ Number of HH members	+ Region	+ Income expectations	+ Risk assessment	+ Windfall

Notes. * indicates significance at a 10% level, ** indicates significance at a 5% level, *** indicates significance at a 1% level. Statistical inference is based on robust standard errors. The dependent variable is non-tax-favoured savings (upper panel) and a change in non-tax-favoured savings (lower panel). In the upper panel, the sample covers all households surveyed in HFCS 2017, excluding those whose dependent variable is outside the range between the 1st and the 99th percentile. The null of the Wald test suggests that the displacement coefficient on non-tax-favoured savings is equal to –1. In the lower panel, the sample covers only the households surveyed in both HFCS 2014 and 2017, excluding those whose dependent variable is outside the range between the 1st and the 99th percentile. The Wald test suggests that the displacement coefficient on the change in non-tax-favoured savings is equal to –1.

CONCLUSIONS

As the dependency ratio grows and income replacement guaranteed by the old-age pension system is projected to decline, the importance of personal wealth is rising. Government provides several tax incentive schemes to encourage individuals to save more. To assess the effectiveness of such schemes, it is important to know whether households' tax-favoured savings contribute to total private savings or they are mainly realized through reallocation of funds between different savings schemes.

This paper extends the relatively sparse literature on the displacement effect of tax-favoured savings in Europe by examining the case of Latvia, the country that has been at the forefront of implementing the three-pillar old-age pension system with a voluntary private pension scheme as one of these pillars. The study uses data from the HFCS carried out in 2014 and 2017. A unique feature of the HFCS database for Latvia is the availability of administrative data on payments to two tax-favoured schemes that exist in Latvia: private pension and life insurance plans. Using cross-sectional and longitudinal (first-difference) regression methods, we show that contributions to tax-favoured savings plans are not associated with a statistically significant decrease in consumer spending (or an increase in total private savings), but are mostly related to savings rearrangement, which is consistent with earlier findings by Anton et al. (2014) for Spain, Paiella and Tiseno (2014) for Italy and Attanasio et al. (2004) for the UK. The results of quintile regressions indicate some evidence that the displacement effect is more pronounced for households with abundant resources for substitution.

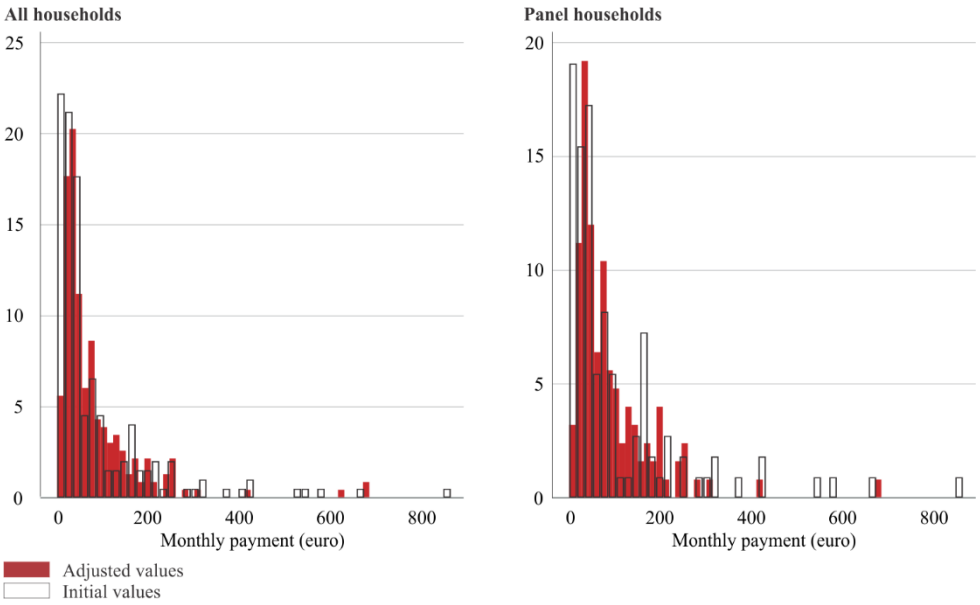
Despite the uncovered displacement effect, the tax relief provided by government cannot be considered worthless. First, it induces a longer saving horizon by locking individual contributions. Second, it contributes to higher net wealth by increasing net return to savings (which otherwise would be made in the form of non-interest-bearing deposit accounts).

In Latvia, participation in tax-favoured savings plans is relatively new and therefore still quite low. Moreover, it is almost non-existing in the two lower income quintile households. Participation is mainly associated with the households in the top income quintile and the ones whose reference person has higher education or is young. This raises concerns that without some form of automatic enrolment in private pension funds (with the option of opt-out), targeted financial literacy studies or a safety cushion in the form of minimum retirement income, inequality between households with different income groups could grow in the future.

APPENDIX

Figure A1

Distribution of household monthly contributions to tax-favoured savings plans in 2017 (non-zero contributions)



Source: authors' estimations using information about panel households in HFCS 2017.
Note. Initial values – respondents' answers, adjusted value – administrative data.

Table A1

Participation and mean of tax-favoured contributions of panel households in 2014 and 2017 (conditional on participation and non-zero contributions)

	Participation and mean of tax-favoured contribution						Median % of monthly payment share in net income of HH	
	Participation (%)		Mean monthly contribution (EUR)		Standard error of mean (EUR)			
	2014	2017	2014	2017	2014	2017	2014	2017
Total	8.9	11.7	41.07	77.78	4.6	7.0	2.2	3.7
HH gross income quintile								
Q1	–	–	–	–	–	–	–	–
Q2	2.6	1.9	17.4	43.0	8.1	11.4	3.3	12.5
Q3	5.8	6.3	50.9	23.7	25.5	7.2	2.3	3.6
Q4	12.0	18.7	31.3	53.0	4.6	9.6	2.5	4.0
Q5	24.4	35.8	47.1	100.2	5.7	9.4	2.0	3.4
Age of HH reference person								
16–34	8.1	17.9	67.0	39.6	28.0	7.6	0.8	2.7
35–44	20.3	25.5	38.6	90.3	5.6	17.6	2.8	3.9
45–54	11.8	14.2	34.2	56.2	7.8	9.3	2.2	3.5
55–64	10.3	11.0	42.1	93.5	9.4	11.9	1.5	6.2
65+	0.5	3.5	59.5	95.7	16.0	19.7	3.1	5.2
Education of HH reference person								
Primary	0.7	4.9	14.6	79.9	8.7	15.6	0.8	4.3
Secondary	6.1	9.1	23.5	52.4	4.2	7.1	1.7	3.7
Tertiary	17.8	19.6	50.0	96.4	6.0	10.6	2.6	3.9

Source: authors' estimations using information about panel households in the two HFCS waves for Latvia (HFCS 2014 and HFCS 2017). Data are weighted to reflect the overall household structure in Latvia.

Table A2
Sample structure by household type

	2017	2017 panel households	2014	2014 panel households
Total	100%	100%	100%	100%
Household size				
1	34%	34%	32%	33%
2	31%	32%	30%	31%
3	15%	15%	18%	17%
4	13%	12%	12%	12%
5+	7%	7%	7%	8%
Housing status				
Owner-outright	61%	64%	63%	67%
Owner with mortgage	11%	12%	13%	14%
Renter or other	27%	24%	24%	19%
Percentile of income				
Q1	20%	25%	20%	21%
Q2	20%	22%	20%	19%
Q3	20%	15%	20%	22%
Q4	20%	19%	20%	19%
Q5	20%	19%	20%	20%
Age of reference person				
16–34	14%	9%	15%	9%
35–44	18%	17%	18%	16%
45–54	17%	16%	19%	21%
55–64	21%	19%	20%	22%
65–74	14%	16%	14%	16%
75+	17%	23%	14%	16%
Work status of reference person				
Employee	57%	50%	52%	50%
Self-employed	7%	6%	7%	6%
Retired	30%	38%	31%	35%
Other not working	6%	6%	10%	10%
Education of reference person				
Primary	16%	17%	19%	20%
Secondary	53%	51%	49%	46%
Tertiary	32%	32%	32%	33%
Location				
Riga	36%	31%	34%	33%
Eight cities	20%	19%	20%	17%
Other municipalities	44%	50%	46%	50%

Source: authors' estimations using information about panel households in the two HFCS waves for Latvia (HFCS 2014 and HFCS 2017). Data are weighted to reflect the overall household structure in Latvia.

Table A3

Estimates of the displacement effect on non-tax-favoured savings and consumption in the *cross-section setup*: Full results

	I	II	III	IV	V	VI	VII	VIII	IX
Contributions	–0.756***	–0.756***	–0.793***	–0.763***	–0.818***	–0.685***	–0.666***	–0.669***	–0.614***
Income	0.711***	0.711***	0.712***	0.721***	0.755***	0.773***	0.772***	0.774***	0.775***
Debt	0.000410	0.000410	0.000576	0.000637	0.000564	0.000621	0.000481	0.000422	0.000408
Mortgage payments	–1.176***	–1.176***	–1.119***	–1.124***	–1.122***	–1.120***	–1.115***	–1.130***	–1.194***
Non-mortgage payments	–1.050***	–1.050***	–1.003***	–1.010***	–0.995***	–1.018***	–1.028***	–1.024***	–1.021***
Real assets	–0.000164**	–0.000165**	–0.000211***	–0.000191**	–0.000169**	–0.000160**	–0.000154**	–0.000168**	–0.000164**
Labour status (employee)	–	–	–	–	–	–	–	–	–
Labour status (self-employed)	13.78	13.60	10.58	7.684	11.11	11.65	10.83	11.07	7.415
Labour status (unemployed)	36.43	36.27	44.87	36.10	46.26	68.79*	67.51*	65.55*	68.86*
Labour status (retired)	127.8***	127.8***	72.59***	66.79***	75.41***	87.95***	84.90***	83.54***	88.53***
Labour status (other)	83.66**	83.77**	77.72*	70.77*	81.29**	84.57**	84.90**	87.68**	92.89**
Gender (male)		1.009	8.893	7.539	5.464	–3.893	–5.019	–5.785	–9.502
Gender (female)									
Age (16–34)									
Age (35–44)			10.23	7.267	20.14	3.447	2.848	10.22	8.873
Age (45–54)			99.27***	99.52***	93.40***	49.03	50.02	53.91*	53.77
Age (55–64)			123.2***	125.5***	102.7***	65.76**	66.62**	69.11**	65.47**
Age (65–74)			157.5***	160.0***	122.1***	86.41**	85.47**	88.44***	83.25**
Education (basic)									
Education (secondary)				–41.83**	–46.24**	–21.94	–21.86	–22.17	–16.46
Education (higher)				–76.56***	–95.88***	–64.69***	–65.62***	–65.86***	–63.89***
HH size (1)									
HH size (2)					–62.08***	–82.51***	–83.70***	–84.04***	–81.43***
HH size (3)					–95.31***	–117.4***	–116.4***	–116.4***	–114.7***
HH size (4)					–139.6***	–167.0***	–168.4***	–174.5***	–167.4***
HH size (5+)					–147.0***	–211.5***	–205.0***	–207.6***	–208.7***
Region (Riga)									
Region (cities)						127.5***	127.8***	129.1***	122.8***
Region (other)						174.3***	172.8***	173.9***	172.2***
Income expectations (>price growth)									
Income expectations (<price growth)							0.232	3.295	–3.462
Income expectations (same as price growth)							–8.582	–5.868	–17.11
Risk assessment (substantial risk)									
Risk assessment (>average risk)								35.33	9.101
Risk assessment (= average risk)								–107.1	–110.5*
Risk assessment (no risk)								–87.06	–93.96
Windfall									0.0437

	I	II	III	IV	V	VI	VII	VIII	IX
Constant	–351.6***	–351.8***	–439.9***	–395.4***	–346.7***	–464.3***	–458.4***	–376.5***	–365.6***
Number of observations	1057	1057	1057	1057	1057	1057	1041	1041	1013
R2	0.765	0.765	0.773	0.774	0.778	0.794	0.791	0.793	0.793
	Labour status	+ Gender	+ Age	+ Education	+ No of HH members	+ Region	+ Income expectations	+ Risk assessment	+ Windfall

Notes. * indicates significance at a 10% level, ** indicates significance at a 5% level, *** indicates significance at a 1% level. Statistical inference is based on robust standard errors. The sample covers all households surveyed in HFCS 2017, excluding those whose dependent variable (non-tax-favoured savings and consumption respectively) is outside the range between the 1st and the 99th percentile.

Table A4

Estimates of the displacement effect on non-tax-favoured savings and consumption in the cross-section setup using HFCS 2014 data

Dependent variable Indicator	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Other savings								
Contribution to tax-favoured plans	–1.198***	–1.244***	–1.278***	–1.233***	–1.351***	–1.267***	–1.174***	–1.043***
Wald test, p-value (H0: contribution to tax-favoured plans = –1)	0.391	0.301	0.225	0.318	0.119	0.245	0.463	0.868
Number of observations	1041	1041	1041	1041	1041	1041	1031	1031
R2	0.842	0.843	0.848	0.849	0.851	0.858	0.859	0.861
Consumption								
Contribution to tax-favoured plans	0.493**	0.558**	0.603**	0.497**	0.600***	0.503**	0.394*	0.243
Number of observations	1054	1054	1054	1054	1054	1054	1043	1043
R2	0.401	0.406	0.422	0.441	0.473	0.505	0.503	0.515
Additional control	Labour status	+ Gender	+ Age	+ Education	+ Number of HH members	+ Region	+ Income expecta-tions	+ Risk assess-ment

Notes. * indicates significance at a 10% level, ** indicates significance at a 5% level, *** indicates significance at a 1% level. Statistical inference is based on robust standard errors. The sample covers all households surveyed in HFCS 2017, excluding those whose dependent variable (non-tax-favoured savings and consumption respectively) is outside the range between the 1st and the 99th percentile. The null of the Wald test suggests that the displacement coefficient on non-tax-favoured savings is equal to –1.

Table A5
Estimates across the distribution of consumption

	I	II	III	IV	V	VI	VII	VIII	IX
Between									
Tax-favoured plans (Q25)	0.162	0.162	0.196	0.172	0.232	0.348*	0.360*	0.269	0.201
R2	0.243	0.243	0.257	0.263	0.290	0.319	0.319	0.324	0.325
Tax-favoured plans (Q50)	0.0567	–0.0209	0.164	0.0437	0.115	–0.0273	–0.0114	0.0661	0.0375
R2	0.251	0.252	0.267	0.272	0.294	0.326	0.329	0.332	0.335
Tax-favoured plans (Q75)	–0.282	–0.306	–0.147	–0.135	–0.165	–0.0369	–0.102	–0.118	–0.187
R2	0.276	0.276	0.286	0.292	0.316	0.344	0.344	0.346	0.350
Within									
Tax-favoured plans (Q25)	0.217	0.195	0.157	0.183	0.197	0.0944	0.0498	0.0421	0.0265
R2	0.030	0.031	0.033	0.036	0.045	0.048	0.048	0.049	0.052
Tax-favoured plans (Q50)	0.152	0.130	0.203	–0.00182	–0.00482	0.0439	0.0921	0.0419	–0.0457
R2	0.054	0.055	0.056	0.057	0.064	0.080	0.082	0.085	0.086
Tax-favoured plans (Q75)	–0.0463	–0.0424	–0.00790	0.0397	–0.0754	–0.203	–0.231	–0.327	–0.454
R2	0.104	0.105	0.111	0.112	0.134	0.156	0.161	0.163	0.165
Additional control	Labour status	+ Gender	+ Age	+ Education	+ Number of HH members	+ Region	+ Income expectations	+ Risk assessment	+ Windfall

Notes. * indicates significance at a 10% level, ** indicates significance at a 5% level, *** indicates significance at a 1% level. Statistical inference is based on robust standard errors. The dependent variable is consumption expenditure. In the upper panel, the sample covers all households surveyed in HFCS 2017, excluding those whose dependent variable is outside the range between the 1st and the 99th percentile. In the lower panel, the sample covers only the households surveyed in both HFCS 2014 and 2017. The estimation in the lower panel is based on first differences.

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