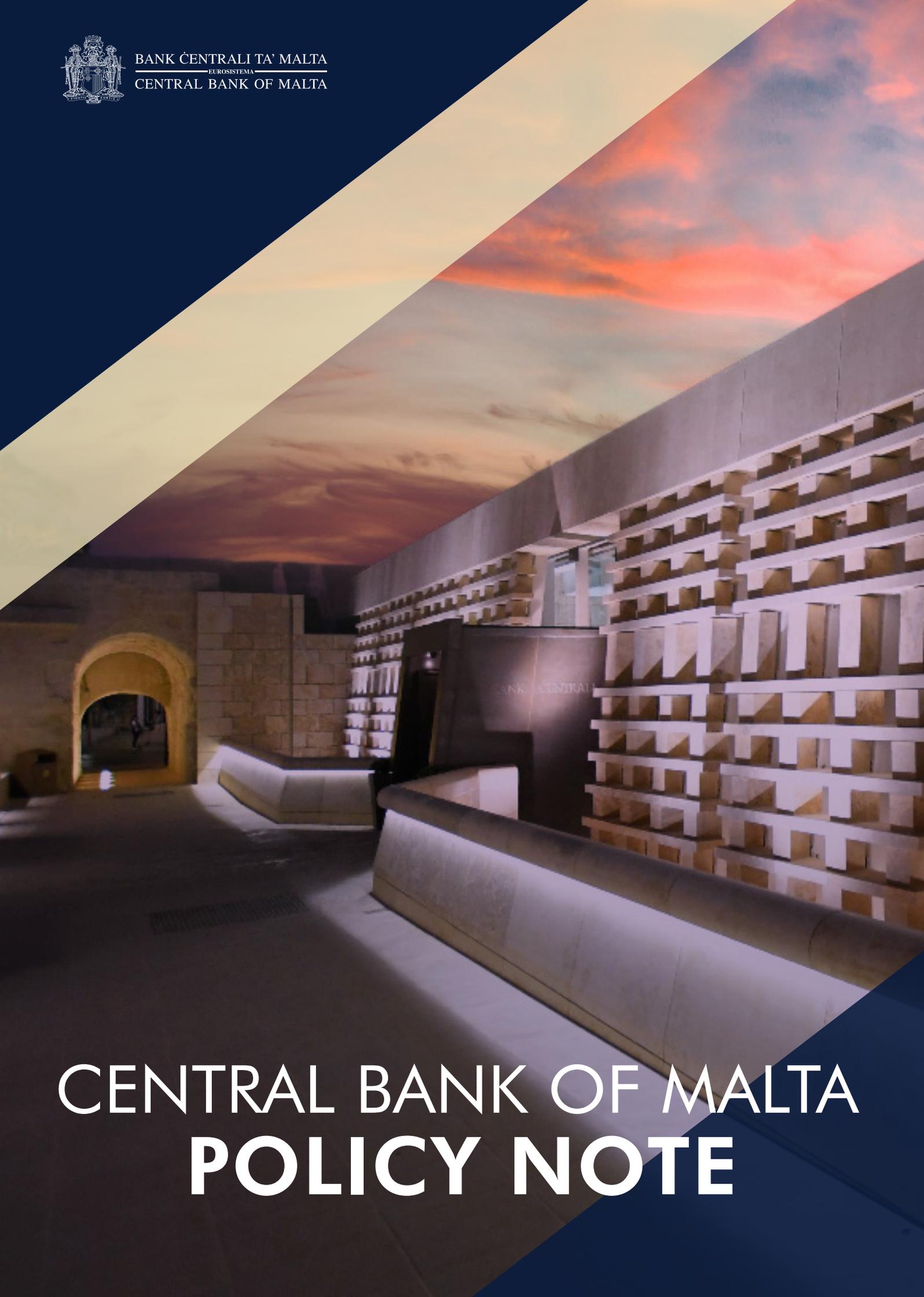




BANK ĊENTRALI TA' MALTA  
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A photograph of the interior of the Central Bank of Malta vaults. The space is filled with rows of metal vault doors, illuminated by warm, golden light. The ceiling is high and features a large, colorful mural of a sunset or sunrise. The floor is polished and reflects the light. In the background, there is a stone archway leading to another part of the vaults.

# CENTRAL BANK OF MALTA POLICY NOTE



BANK ĊENTRALI TA' MALTA  
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**Who are the (dis)savers?  
A look at household saving patterns and  
wealth composition in Malta**

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Policy Note

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## Abstract

In this note we build on recent findings on household saving patterns in Malta by utilising two large-scale surveys: the Household Budgetary Survey (HBS) and the Household Finance and Consumption Survey (HFCS). We show that saving rates correlate strongly with income and age, and that a significant share of households which dissave tend to report positive saving in a self-assessment question of one of the surveys. Under-reporting of income, financial illiteracy and cognitive errors and biases may be behind this finding. A significant share of dissavers tend to be old-age and low-income households, which may have difficulty meeting unanticipated expenses unless they can draw from a buffer of wealth. Households are heterogeneous in their wealth holdings, and while several dissavers can fall back on a buffer of wealth, a lot of this wealth is tied up in illiquid assets. Furthermore, we show that some of the old dissavers do not have a sufficiently large pot of liquid savings to finance their current dissaving patterns over the rest of their life. These findings are of policy relevance especially when assessing the ability of retired households to meet an unanticipated expense. Home equity release schemes can free up wealth held in property, while emphasis on pension plans for younger households can prevent this situation for future retirees.

**JEL classification:** C21, D14, D31, G11

**Keywords:** saving, heterogeneity, wealth distribution, HBS, HFCS

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## Executive Summary

In this note we make first use of the Household Finance and Consumption Survey (HFCS) to study saving behaviour in Malta. First, we confirm that the key findings in Abela and Gatt (2021) based on the Household Budgetary Survey (HBS) are not sensitive to the exclusion of wealth in the model. This is because the proxy used – ownership of a secondary property – correlates well enough with measures of wealth. Saving rates correlate positively and strongly with income and age, although theoretically old-age households are expected to dissave through the stock of wealth accumulated in middle-age.

We then assess the reliability of self-assessed saving patterns across households, finding that there is significant disagreement across estimated and self-assessed saving rates. A significant share of dissaving households tend to believe that their income exceeded expenditure in the preceding year. We also observe this for households with high negative saving rates. Under-reporting of income, financial illiteracy, and responder cognitive errors and biases, including a ‘social desirability bias’ are all reported as factors in the literature and may be behind this finding. This issue has implications for statisticians, analysts, and policy makers – it indicates the need for better checks when surveying income during surveys, for analysts to cross-check with other available databases, and call for more financial literacy campaigns.

We then focus on the characteristics of the dissavers and attempt to find a common denominator. Over half of all dissavers in the HBS fall in the bottom two income quintiles. In the HFCS, four out of five households with negative savings fall in the bottom two income quintiles. This finding is relevant as a considerable share of households may not be able to build a buffer against anticipated and unanticipated adverse shocks. These households are also heterogeneous in their wealth holdings.

Finally, we look at the composition of wealth, arguing that some households are likely ‘wealthy hand-to-mouth’, a term used in the literature for households whose wealth is mostly tied up in illiquid assets. From a policy perspective this may be of concern for retired households, whose dependence on a pension means they cannot easily adjust to unanticipated shocks. Furthermore, we show that some retired households may find it hard to finance their current expenditure patterns over the rest of their expected lifetime from their pot of liquid savings. To this end, home equity release schemes as recently announced in Malta in 2019 can provide the required liquidity to adjust in the wake of shocks and smoothen consumption over retirement, although this should be complemented with efforts to both encourage adequate saving during households’ working years through various saving vehicles as well as to increase take-up of occupational and personal pension schemes.

## Introduction: existing results on household saving patterns

Household surveys are often the main source of data for research into saving behaviour at the household level, yet the literature on this topic in the local context is relatively scant. An exception is the study by Le Blanc et al. (2016), who explore determinants of saving motives and correlates of negative saving across euro area countries, including Malta, using HFCS data. In a recent paper (Abela and Gatt, 2021), we use microdata from the 2008 and 2015 waves of the Household Budgetary Survey (HBS) to explore Maltese households' saving rate distributions and their probability of saving across a broad range of household characteristics. The HBS provides a rich dataset containing close to 3,700 observations in each wave, including data on households' income, expenditure and several demographic and socio-economic characteristics which allows for estimation of predictive models of household saving behaviour. Using average marginal effects derived from a logit model, we identify household attributes that are linked to a higher or lower probability of saving. Higher income is increasingly associated with positive saving, as are older age, lower education, and unemployment, consistent with the theoretical notion of the precautionary (and for older households, the bequest) saving motive.<sup>2</sup> Marital status, residential property tenure and the number of adults and children residing in a household, amongst others, also relate to the probability of saving. In Figure 1 below we replicate the key results from the study based on the 2015 HBS dataset, framed in terms of the average probability that a household with a given characteristic saves.<sup>3</sup>

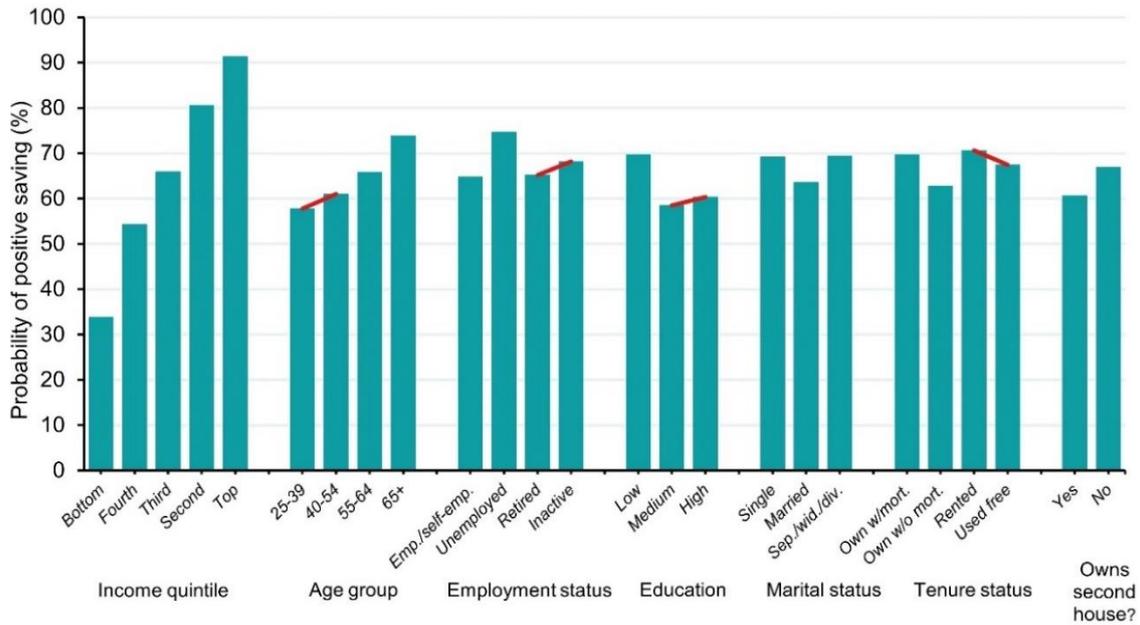
A key shortcoming of this approach is that wealth, an important determinant of saving, is not directly observable in the HBS. A proxy for wealth, ownership of secondary property, is used instead. An alternative source of data which is yet to be employed for the study of saving behaviour in Malta is the Household Finance and Consumption Survey (HFCS). The HFCS collects granular data about households' sources of income and finance, expenditure patterns and, importantly, wealth holdings in 22 European Union (EU) countries. The HFCS therefore can address the absence of information on household balance sheets in the HBS data, although it has far fewer observations for use in econometric models. In this study, we first replicate the analysis performed in Abela and Gatt (2021) using data from the most recent wave of the HFCS, for which data collection in Malta was carried out between January and April of 2017. This exercise serves to provide additional verification of the robustness of our results to the addition of wealth. For brevity, as well as due to data quality reasons we outline in the paper, we compare results only with those obtained using the 2015 wave of the HBS. We then seek to make use of both the HBS and the HFCS datasets to address three additional policy-relevant questions which relate to our previous work.

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<sup>2</sup> Le Blanc et al. (2016) show that, besides precautionary and bequest motives, Maltese households are also more likely to save for old age provision, to purchase their own home, and to pay off debts than the euro area average. In instances where expenses exceed income, two-thirds of Maltese households finance the excess consumption by decumulating savings; only Dutch households (70.8%) are more likely to do so in the euro area.

<sup>3</sup> The probabilities graphed in Figure 1 are average probabilities of a household in each category having positive saving, controlling for all other characteristics. The average marginal effect of a household having a given attribute as opposed to having the characteristics of the baseline household is given by the difference between the average probabilities of the two categories in question.

**Figure 1: Average probability of saving by key household characteristics**



Sources: HBS (2015), Abela and Gatt (2021) and authors' calculations.

Note: The red line between two bars denotes no statistically significant difference between the probabilities at a 10% level of significance. For example, there is no statistically different probability of saving between households whose representative person is aged 25-39 years or 40-54 years.

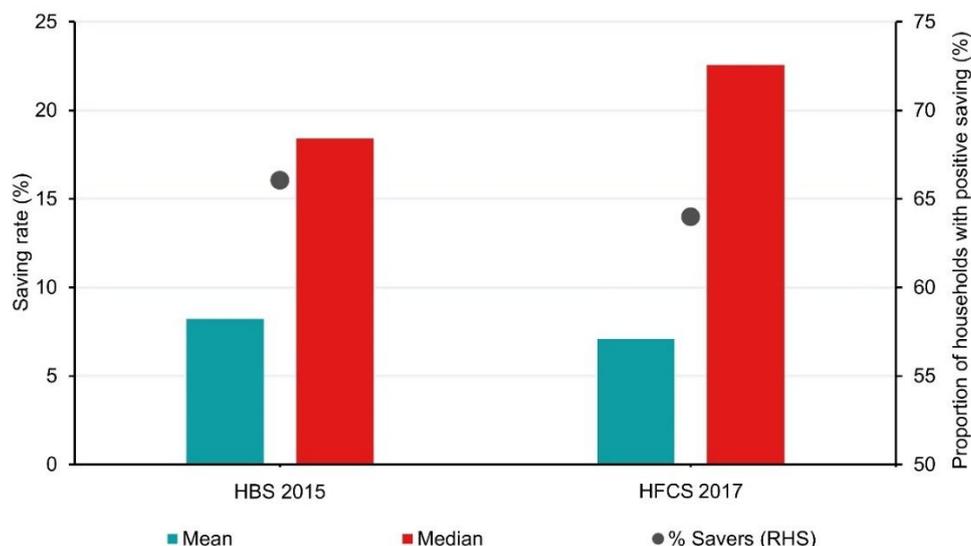
We start by comparing the saving rate distributions between the two relevant datasets, those from the 2015 HBS wave and the 2017 HFCS wave.<sup>4</sup> In both datasets, we calculate saving as the difference between regular income and expenditure flows. As explained in Abela and Gatt (2021), income and expenditure in the HBS dataset exclude certain items that are not considered to be of a regular nature. Moreover, income in the HBS datasets is disposable income, that is, gross income net of taxes and social security contributions. In the HFCS survey for Malta, income is collected in gross terms only.<sup>5</sup> In general, the two distributions possess similar profiles, although some slight differences can be noted. Firstly, saving rates in the HFCS dataset are slightly more dispersed than in the latest HBS wave. The median estimated saving rate in the HFCS dataset is somewhat higher than in the HBS, at 22.6% compared to 18.4%, whilst the mean saving rate is slightly lower. The larger difference between the median and the mean saving rate in the HFCS dataset reflects a more pronounced negative skewness in the saving rate distribution. In fact, despite the median household in the HFCS

<sup>4</sup> All the analysis in this note is conducted after necessary data cleaning in each dataset, including trimming 2.5% of the observations from each tail of the saving rate distribution, in line with our previous work. The dataset we use for the analysis that follows is composed of 883 observations.

<sup>5</sup> Some differences are also present in the makeup of the expenditure variable. Expenditure in the HBS only includes the interest component of mortgage repayments. In the HFCS, data on mortgage repayments is not broken down into the interest and capital components, and is thus excluded from the computation of expenditure in our calculation. Similarly, in the HBS, expenditure on holidays excludes subsistence expenditure incurred abroad; in the HFCS, no breakdown of holiday expenses is available and thus this expenditure category is also excluded. All else equal, these factors could result in slightly overestimated saving rates for some households in the HFCS, a factor which should be taken into account in comparisons between the two data sources.

sample having a higher estimated saving rate, the proportion of households which are estimated to be savers in this database (64.0%) is slightly lower than in the HBS sample (66.1%).<sup>6</sup>

**Figure 2: Descriptive statistics by dataset**



Sources: HBS (2015), HFCS (2017) and authors' calculations.

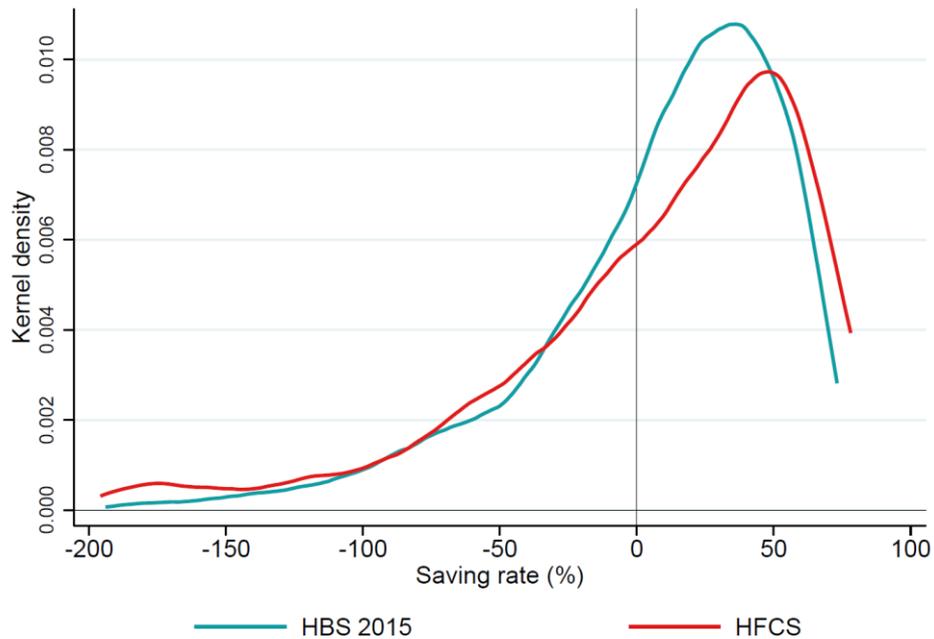
We estimate a series of logit models using HFCS data, initially starting with a model specified as closely as possible to our benchmark model in Abela and Gatt (2021).<sup>7</sup> The result can be seen in the leftmost column of Table 4 in Appendix A. In line with the results in the paper we refer to, income is strongly and monotonically positively related to the probability of saving, whilst older households are also found to be more likely to save than those with relatively younger reference persons (RPs). Although the pattern is weaker in this case, those in the oldest age group are more likely to save than households in the rest of the groups, in line with our previous finding that older households are most likely to be strong savers when employing a generalised ordered logit specification. Households with an unmarried head are also more likely to save. Although a few other variables such as the RP's educational attainment and the household's tenure status do not turn out to be statistically significant when using HFCS data, the general picture given by these results remains unchanged - the key variables driving saving behaviour are income and age.<sup>8</sup>

<sup>6</sup> In this note we explore the cross-sectional dimension of household saving behaviour in the context of high economic growth, averaging 8.1% between 2015 and 2017 as per NSO News Release 156/2021. It is possible that some households experienced stronger actual or perceived gains in income or wealth (and therefore adjusted their expenditure accordingly) than other households. This could shift the distribution of saving rates. Nevertheless, we believe that the core underlying patterns are preserved in the 2017 HFCS wave.

<sup>7</sup> No data is available in the HFCS dataset to create variables relating to the type of property occupied by the household and to whether the household rents other property besides its main residence. Analytically, no clear results emerge in our paper from the 'type of property' variable, despite one of its categories being weakly statistically significant, whilst the variable for renting other property is not statistically significant in any specification.

<sup>8</sup> The limited sample size of the HFCS dataset, at just over one-fourth of the HBS sample from the 2015 wave, may also weaken the statistical significance of results in general.

Figure 3: Saving rate kernel densities by dataset



Sources: HBS (2015), HFCS (2017) and authors' calculations.

A key contribution of the HFCS dataset to our work is the availability of data on household wealth, an important theoretical and empirical determinant of saving behaviour. Nevertheless, wealth is not found to be a significantly correlated with the probability of saving when included in our model as an additional control variable (see Table 4). We do not find any significant effect of wealth on Maltese households' saving position even when we disaggregate it into financial and real assets, a relevant distinction owing to the differing liquidity across these asset types. These results might be driven by the significant heterogeneity across households, in both their saving patterns, wealth levels and wealth composition, coupled with a relatively small number of observations in the model, weakening statistical inference. Nevertheless, we find no strong indication that our initial model using HBS data is misspecified. This is because wealth and ownership of additional property are correlated (see Appendix A), suggesting that ownership of other property is a suitable proxy for wealth.

We combine information available within both the 2015 HBS dataset and the HFCS dataset to address three policy-relevant topics related to household saving. First, we compare the estimated saving rates of households in the dataset to their subjective assessment of their saving position, shedding light on the accuracy of self-assessment by households. We then delve deeper into the characteristic traits of households which appear to be less likely to save in our data. In the last section, we focus on the composition of household wealth in Malta and how this may relate to saving behaviour, with emphasis on old-age households and their liquidity position.

## 1. Do households reliably assess their saving positions?

The key variable we use in this analysis, when using either the HFCS or the HBS datasets, is a binary indicator which takes a value of 1 if the saving rate for a household is positive, and a value of 0 otherwise, following the methodology in Abela and Gatt (2021). However, the HFCS questionnaire also includes a subjective question which asks whether the reference person believes that in the preceding twelve months, their household's income was higher than, approximately equal to, or lower than regular expenditure. The output of this question therefore provides an alternative indicator with which we can classify the saving position of households.<sup>9</sup> The availability of both an objectively estimated household saving rate and a subjective assessment by the household on its saving position can provide useful insights on the reliability of self-reported saving behaviour. Table 1 shows how the households in our HFCS sample are distributed across these two indicators of saving behaviour. The indicator based on the saving rate classifies 318 (36%) households as dissavers and 565 (64%) households as savers. Meanwhile, the indicator based on the survey question takes three values. In 100 households, the reference person considers expenditure to have exceeded income in the twelve months leading up to the survey; conversely, 414 households believe to have had a surplus of income over expenditure, whilst income and expenditure were deemed to be at similar levels in the case of the remaining 369 households.

**Table 1: Comparison of self-assessed saving position and estimated saving rate**

Positive saving rate	Income > expenditure last 12 months			Total
	No	Same	Yes	
No	43	155	120	318
Yes	57	214	294	565
Total	100	369	414	883

Sources: HFCS (2017) and authors' calculations.

Since those households which have just about equal levels of income and expenditure are expected to include both actual savers and dissavers, we exclude such households in this part of our analysis, to focus on households for which we expect the two indicators to be consistent. Nevertheless, a substantial discrepancy still emerges between the two indicators. Overall, the values taken by the two variables are consistent for just 337 of the 514 remaining observations, or 65.6%, as can be verified from the below table. Most of the discrepancy is attributable to households for whom we estimate a negative saving rate, yet indicate in their survey response that their household income exceeded expenditure. In fact, most households whose estimated saving rates are negative believe

<sup>9</sup> This variable is used for analysis by some studies in the literature. For instance, Le Blanc et al. (2016) study the association between household characteristics and saving behaviour across euro area countries based on this indicator.

their household has effectively saved over the year prior to the survey. Conversely, a considerably lower proportion of savers believe that their household's expenses exceeded income.<sup>10</sup>

**Table 2: Comparison of self-assessed saving position and estimated saving rate, excluding households which break-even**

Positive saving rate	Income > expenditure last 12 months		Total
	No	Yes	
No	43	120	163
Yes	57	294	351
Total	100	414	514

Sources: HFCS (2017) and authors' calculations.

The indicators remain inconsistent even at the extremes of the saving rate distribution. All households in the bottom saving rate quintile are estimated to have a negative saving rate. Nevertheless, 57 of these still declare that their household income exceeded expenditure. Meanwhile, of the 112 households in the top 20% of the saving rate distribution which remain in the sample, just 11 claim they are dissavers. These figures sustain the finding that households at the lower end of the saving rate distribution exhibit a greater discrepancy between the two measures than those at the top. Moreover, overestimation of saving among dissaver households appears to be systematic in the data. Even among households with the strongest negative saving rates, which could be expected to be more able to accurately identify their saving position, overestimation remains proportionately the same as for the overall sample.

**Table 3: Comparison of saving indicators across saving rate quintiles**

Positive saving rate	Bottom SR quintile		Top SR Quintile		Total
	Inc > exp. last 12 mth.		Inc. > exp. last 12 mth.		
	No	Yes	No	Yes	
No	33	57	–	–	90
Yes	–	–	11	101	112
Total	33	57	11	101	202

Sources: HFCS (2017) and authors' calculations.

Notes: For households in the bottom quintile of the saving rate distribution, saving rates range between -194.2% and -31.6%. For those in the top quintile, they range between 54.5% and 78.1%.

The literature on survey response and measurement errors could explain part of this discrepancy. Firstly, it is well-known that survey respondents tend to misreport their incomes. Underreporting is documented not solely with respect to employment income, but also for income from transfer programs (Meyer et al., 2015), pension income (Bee and Mitchell, 2017), and self-employment

<sup>10</sup> Some households could appear to be underestimating their saving due to our choice to exclude mortgage payments from the HFCS. A household which dissaves only when we include mortgage payments would be classified as being a saver by our indicator.

and capital income (Neri and Zizza, 2010).<sup>11</sup> Survey data are also susceptible to cognitive errors and biases by respondents. Interviewees may misunderstand questions, commit mistakes in the mental process of retrieving information, and erroneously perform mental arithmetical operations required by certain questions (Moore et al., 2000). Sensitive questions, including those dealing with income, tend to result in a greater extent of misreporting. Behaviour or attitudes considered socially undesirable are commonly underreported whilst socially desirable ones are overreported (Bound et al., 2001; Tourangeau and Yan, 2007). This 'social desirability bias' yields reported outcomes that revert towards the mean (Angel et al., 2019).

The above suggests two alternative possibilities as to why households in our dataset provide conflicting information on their saving patterns. Some households may under or over-report income in the survey, resulting in an under or over-estimated saving rate, but inadvertently fail to also respond consistently (with their misreporting of income) to the subjective question on their saving position.<sup>12</sup> An element of social desirability bias, independent from income misreporting, could also be at play. A household that dissaves may nevertheless declare being a saver in the subjective question due to social desirability effects, although this can also be done by households which intentionally underreport income. Social desirability bias may also explain why a significantly greater proportion of households 'overestimate' rather than 'underestimate' their saving when compared to our estimated saving rates. Whilst when declaring income there are incentives driven by social desirability to misreport at both ends of the distribution, this may not be the case in terms of declaring a binary 'saving or dissaving' state. It may be considered socially undesirable to dissave, prompting some dissavers to declare saving, but being a saver household may carry fewer unfavourable cultural and social associations.

Alternatively, the inconsistency in households' evaluations of their saving positions could reflect a lack of financial literacy, defined as the ability to both process economic information and make informed financial decisions (Lusardi and Mitchell, 2014). Financial literacy tends to be low across the general population, even in advanced economies such as the US, Germany, the Netherlands and Japan; however, certain demographic characteristics appear to be more likely to be associated with financial illiteracy.<sup>13</sup> These generally include the less educated, women, the elderly, and those out of employment. Low numeracy and cognitive ability, although related to lower education, are also linked to low financial literacy and suboptimal economic outcomes. Meanwhile, higher incomes and self-employment are positively associated with financial literacy.

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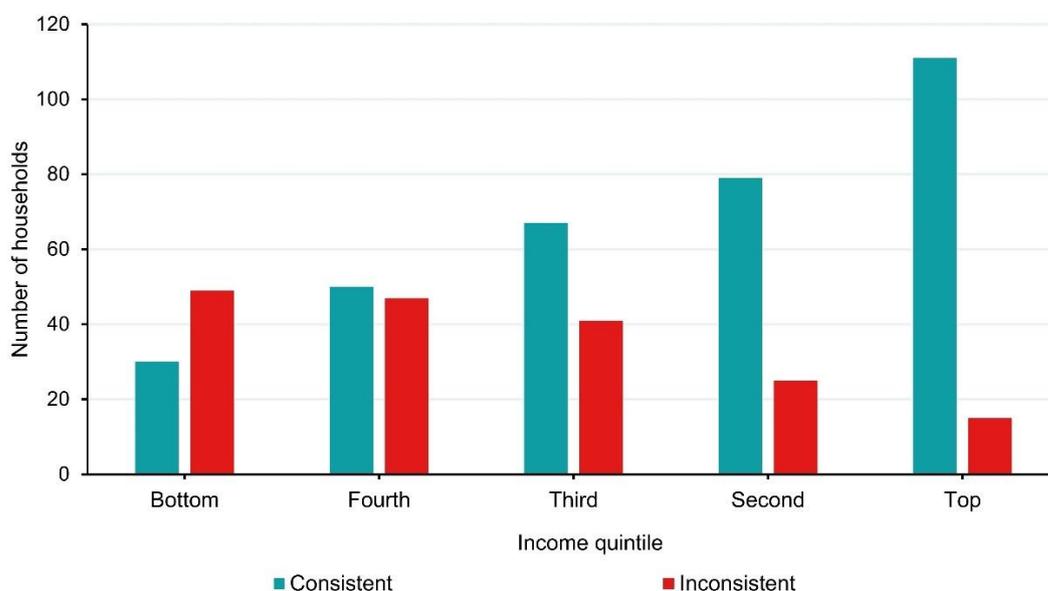
<sup>11</sup> Significant attention is paid in the literature to the self-employed, since these are generally assumed to face higher costs to accurately calculate their income, and to have greater incentives to underreport it (Hurst et al., 2014). Hurst et al. (2014) and Paulus (2015) estimate that households with self-employed heads underreport their income by 25% and 20% respectively relative to employees, whilst Kukuk et al. (2018) estimates that underreporting varies from 5% to 43% across 14 EU countries.

<sup>12</sup> The fact that income in the HFCS is before taxes might play a role for some of the observed inconsistency, but it is unlikely to be behind the systematic pattern we observe.

<sup>13</sup> See Lusardi (2008) and Lusardi and Mitchell (2014) for a detailed review of the literature relating to financial literacy and its relations to different economic decisions and outcomes.

We therefore explore how the consistency of respondents' self-assessed saving position varies with some key correlates of financial literacy identified in the literature. Figure 5 below illustrates how the consistency between our saving indicators varies with income, showing a clear positive relationship between consistent self-assessment and income level. This monotonically positive relationship with income suggests that financial literacy potentially plays a greater role in what we observe than other explanations.<sup>14</sup> However, the patterns that emerge when tabulating the accuracy of self-assessment against factors such as education, employment status, age and wealth are less clear, despite the fact that these are clearly correlated with financial literacy in the literature.<sup>15</sup> The pattern could also reflect the possibility that households which under-report their income fall in the lower income quintiles. Therefore, we believe financial literacy may in fact partly explain our findings, but we refrain from drawing any strong conclusions to this effect.

**Figure 4: Consistency of self-assessed saving with estimated saving position**



Sources: HFCS (2017) and authors' calculations.

Note: 'Consistent' denotes observations for which saving rates signs and self-reported saving are the same (for instance, positive and positive) and vice versa.

<sup>14</sup> All else equal, if the result was mostly driven by misreporting of income, most mis-reporters would be expected to make up a larger proportion of the middle income and saving quintiles. This would imply that those in the bottom and top quintiles of the income and saving rate distributions are either true dissavers and savers, or else mis-reporters who reply consistently to the subjective question. These would thus be expected to accurately assess their saving position except for factors such as cognitive errors or financial illiteracy. Meanwhile, assuming the presence of a social desirability bias, one would expect higher (or at least not lower) levels of inconsistency by the higher income quintiles when compared to the middle-income group.

<sup>15</sup> To verify the associations suggested by this descriptive analysis, we run a logit model to explain the probability of a household's self-assessment being consistent with its saving position as shown by our estimated saving rates. The model employs the key covariates as well as several control variables including marital status and having outstanding debt. Of the five key characteristics outlined above, only income is significantly related to the probability of consistent self-assessment, exhibiting a similarly monotonic relationship as seen in the tabulation exercise. Results are available on request.

Both inaccurate self-assessment and misreporting more broadly may negatively impact policy formulation processes which are informed by data collected through surveys. Researchers and policymakers need to be aware of the distortions that such phenomena may cause to data quality, and of what steps are taken, if any, to minimise their prevalence in surveys from which they are sourcing data. Particularly in the case of data relating to population subgroups which exhibit a higher tendency to misreport, poorer quality data may result in less effective targeted policies (Angel et al., 2019). Whilst an in-depth discussion relating to data quality is beyond the scope of this study, it is noteworthy that certain steps taken in both the design and administration stages of a survey can mitigate these issues<sup>16</sup> Additionally, more widespread availability of administrative microdata can allow researchers to link administrative datasets to survey microdata. Administrative data generally has a smaller extent of measurement error and could also substitute certain questions in the survey, reducing the burden on respondents (Meyer et al., 2015).

Insofar as the observed errors could also reflect a lack of financial literacy, it is appropriate to briefly consider avenues available to policymakers to mitigate this issue. Financial education programs have been widely implemented in several countries in recent years; such programs have been shown to be more effective when targeting specific subgroups which are at greater risk of financial illiteracy (Lusardi, 2008; Lusardi and Mitchell, 2014). There is a clear scope for further study of financial literacy in Malta, together with appropriate measures to increase financial knowledge.<sup>17</sup> Recent initiatives have included the launch of [gemma.gov.mt](http://gemma.gov.mt) – a financial literacy website focusing on money management and retirement planning – together with other efforts by authorities and private entities. Policymakers and social partners should maintain such efforts, whilst future research must be geared towards identifying subgroups of the population which are deficient in terms of financial proficiency and designing effective information programs targeting these cohorts.

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<sup>16</sup> For instance, integrating clear definitions within surveys where appropriate can minimise the misunderstanding of questions (Fowler, 1995), whilst assurances of confidentiality, matching demographic characteristics between interviewers and respondents, wording that plays down the seriousness of undesirable behaviour, and self-administration of surveys where practical can improve responses to sensitive questions (Tourangeau and Yan, 2007; Neri and Zizza, 2010).

<sup>17</sup> Recently, Malta was included in the 2020 wave of the OECD/INFE International Survey of Adult Financial Literacy (OECD, 2020). Nevertheless, this is to our knowledge the only available study that measures financial literacy in the general Maltese population, and the module for Malta excludes several parts of the survey carried out in other countries.

## 2. Who are the dissavers in Malta?

In Abela and Gatt (2021) we plot the distribution of household-level saving rates, both unconditional and conditional on some key characteristics. In all cases, we observe that the distributions exhibit fat left tails, suggesting that a sizeable number of households are dissaving irrespective of the way they are categorised. Motivated by this finding, in this section we explore the composition of these dissavers, focusing on the sample pertaining to the 2015 wave of the HBS, and compare findings to those emerging from the HFCS data. Such analysis is both rooted in and illustrative of the heterogeneity in households' saving behaviour, even between households within socio-demographic groups.

Of the 3,461 households remaining in the 2015 HBS sample, just over one in three are estimated to be dissavers. Figures 5 and 6 below show how these dissavers are distributed across a few key attributes. Regression analysis outlines income as a key determinant of a household's ability to save; the average probability of saving varies by close to 58 percentage points across the five income quintiles (Figure 1). Considering only dissavers, we find that over half (56.2%) of these households are in the bottom two income quintiles, having a total disposable household income of approximately €1,670 per month or less. This is consistent with the fact that the majority (52%) of households in the bottom income quintile (with total disposable income of less than €1050 monthly) dissave, with this proportion standing at 43.1% for the succeeding quintile – significantly higher than the overall sample proportion of 33.9%. This finding is even more pronounced in the HFCS sample, where four of every five households that we estimate to be dissavers fall in the bottom two quintiles. Households earning below the median income could therefore be at relatively higher risk if affected by adverse income shocks, particularly since additional analysis below indicates a positive relationship between income and wealth levels.<sup>18,19</sup>

The probability of saving when controlling for all other characteristics increases with age in our results, with households headed by respondents aged 55-64 and older than 65 being more likely to save than those with RPs aged 54 and younger. However, as we show in Figure 6, close to a third of dissavers are households whose RP is older than 65 years of age. Furthermore, 30% of dissaving households are in the 40-54 age group, while only around 16% are in the 25-39 group. The pool of dissavers in our HFCS sample is relatively more skewed towards older households. After accounting for differences in sample composition, we find that slightly more than half of all dissavers are in the 65+ age group, while the proportion of dissavers in the other age categories are correspondingly smaller than those in the HBS sample. In both datasets, we find that most dissavers are households

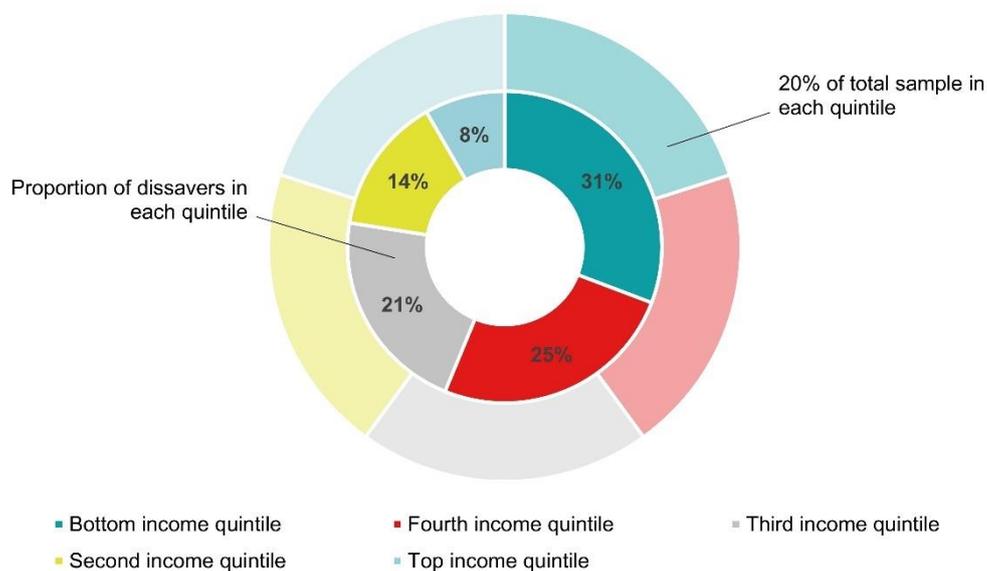
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<sup>18</sup> In the 2017 HFCS dataset, the median net wealth of households in the highest income quintile exceeds €365,000; it stands at approximately €231,000 for those in the middle income quintile, and at about €157,000 for those in the bottom 20% of the income distribution.

<sup>19</sup> In line with the discussion in the previous section, this result could be slightly accentuated by some extent of income underreporting.

whose RPs are educated up to secondary school level or less – a factor which, when controlling for other variables, is linked to a higher probability of saving in Abela and Gatt (2021).

**Figure 5: Distribution of dissavers by income quintile**



Sources: HBS (2015) and authors' calculations.

Note: The outer pie charts show the distribution in the entire sample.

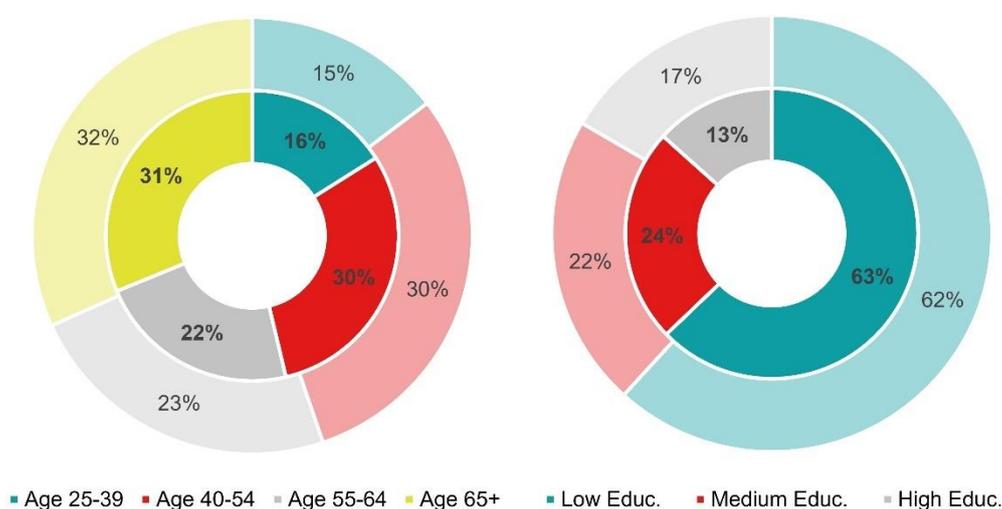
These findings reflect the composition of the overall sample of households across age cohorts and levels of educational attainment, especially in the case of the HBS dataset. Therefore, although the elderly make up the greatest proportion of dissavers, this does not by itself imply that they are facing difficulties in maintaining their standard of living. In fact, dissaving by the elderly is perhaps expected, being a key element of the Life Cycle Hypothesis of consumption; elderly households are expected to decumulate the stock of wealth built up during their working years, at a pace which is affected by possible bequest motives and uncertainties about health and lifespan. This theoretical prediction is empirically supported by several studies based on household-level microdata, such as Ando et al. (1993), Horioka (2010), Hurd and Rohwedder (2010), Murata (2019) and Ventura and Horioka (2020). All of these studies find that older households tend to decumulate their wealth, but at a relatively slower pace if they engage in precautionary saving or intend to leave bequests. At the same time, what we document above shows that even if certain socio-demographic factors are linked with a higher probability of saving, all else equal, this is not to be interpreted as an indication that households in these categories necessarily make up a negligible share of dissavers.

The distribution of dissavers across most other household characteristics is also well in line with the composition of the overall sample.<sup>20</sup> Separately re-classifying households by the remaining

<sup>20</sup> This is the case in both datasets, although there are two exceptions in the HFCS sample. In terms of employment, the share of retired dissavers is greater than the share of such households in the overall sample, in line with the relatively high proportion of dissavers in the oldest age group. Moreover, the share of dissavers that

socio-demographic variables in our HBS dataset, we compare the proportion of dissavers falling into each category of each variable to the proportion of households in the total sample pertaining to that group. For all categories of marital status, employment, tenure status, ownership of additional property and the number of household members, these proportions differ by less than 4%, with one exception.<sup>21</sup> This ties in with the fact that, except for when ordering households by income, the share of households that dissave does not vary substantially from the aggregate proportion of about one third in any category. Dissaving households are therefore somewhat more likely to be low-income earners and perhaps of older age, yet when grouping households by other variables, dissavers are present in all categories in proportion with each category's share in the overall sample. Dissavers could therefore possess diverse profiles rather than being associated with a narrow set of characteristics.

**Figure 6: Distribution of dissavers by age and educational attainment**



Sources: HBS (2015) and authors' calculations.  
 Note: The outer pie charts show the distribution in the entire sample.

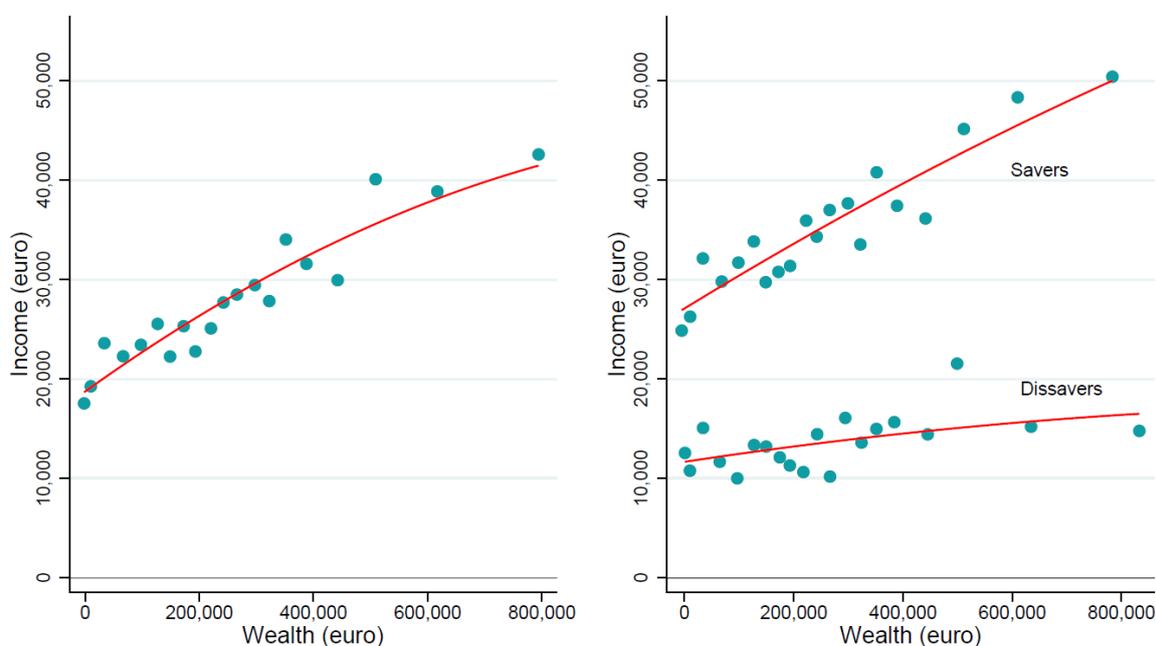
own their property with a mortgage is just below half of their share in the total sample; however, this is accounted for by the fact that expenditure in the HFCS excludes both interest and principal components of mortgage repayments, whereas in the HBS only the interest component is included in expenditure.

<sup>21</sup> Households with two adults make up 49% of all households in the sample but account for 57.2% of all dissavers. Cross-tabulating data does not suggest that factors such as marital status or tenure can account for such households being likelier to dissave than average (when not controlling for other effects). However, around 23% of these households have two or more children; this is the case for at most 7% of households with one adult or between three and five adults.

### 3. Are there differences in wealth holdings between savers and dissavers?

The findings reported in the previous section indicate that income levels seem to be an important discriminant between savers and dissavers. Although to a certain extent this is expected, since saving is a function of income, in this section we shed further light on this relationship, focusing on the nexus between income, saving and wealth using HFCS data.<sup>22</sup> In Figure 7 we plot income against wealth and draw some interesting patterns. First, household income and wealth are positively correlated, as expected. Second, this relationship is much stronger for savers than it is for dissavers, which is in line with the findings discussed in the previous section, based mainly on HBS data. Third, there are several dissavers which have low income but still hold considerable wealth. This reveals a subtle but important observation: dissavers are not only low-wealth households. Therefore, while dissavers tend to have lower income at the same levels of wealth as savers, they are heterogeneous in their wealth holdings.<sup>23</sup>

Figure 7: The relationship between income, wealth and saving



Sources: HFCS (2017) and authors' calculations.

Notes: The left panel shows observations grouped into 20 bins, each of equal size, and a fitted quadratic polynomial. The parameters of the fitted polynomial are estimated on all the observations in the dataset and are not affected by the number of bins plotted. The right panel shows the same link, distinguishing between savers and dissavers. Observations at higher wealth levels are excluded from this analysis.

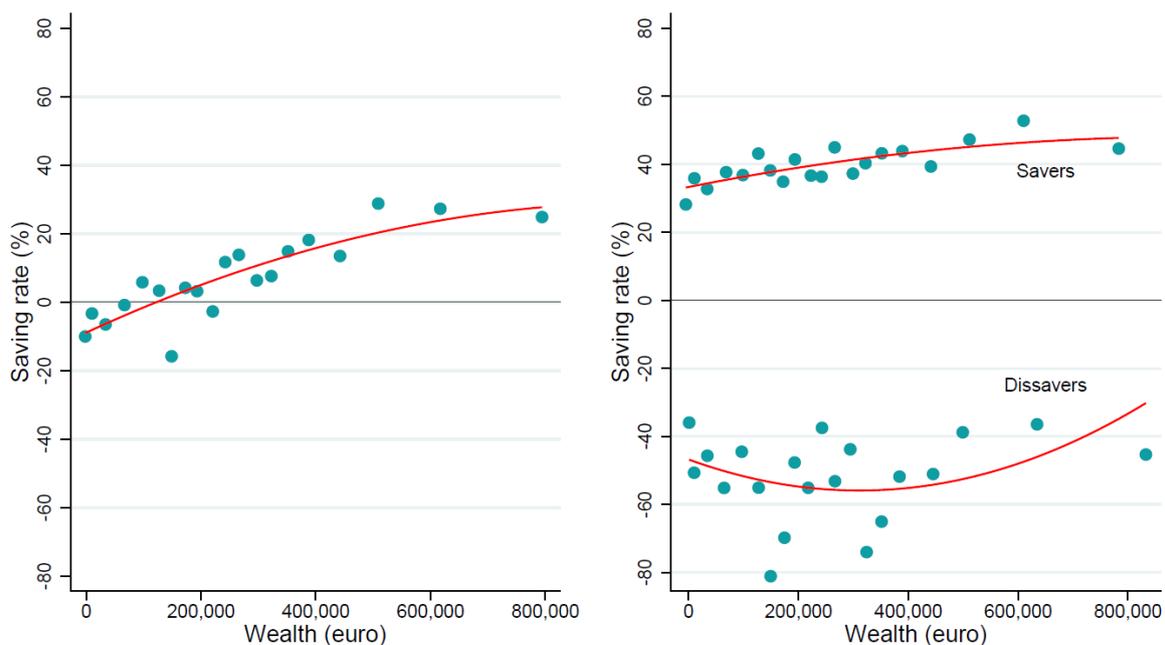
We run similar analysis in Figure 8, with the left panel showing that saving rates in general tend to rise with wealth. The relationship is non-linear, meaning that saving rates rise at a slower pace

<sup>22</sup> Throughout this paper wealth is defined as assets net of liabilities.

<sup>23</sup> We show similar patterns for expenditure in Appendix A, in which there are no important differences between savers and dissavers.

as wealth increases further.<sup>24</sup> This is similar to evidence for Norway, in which saving rates become flat at high levels of wealth (Fagereng et al, 2019). Although this finding is in line with expectations, the panel on the left conceals important patterns. On the right hand side, we show what the relationship looks like again when we distinguish between savers and dissavers. The relationship between saving and wealth levels is much stronger among savers, with many observations clustered closely around the fitted curve. The relationship for savers is the same as that over all households, growing over wealth at a progressively slower rate. On the other hand, there is significant heterogeneity among dissavers, and the resulting relationship is inverted. The apparent relationship for dissavers implies that saving rates initially become more negative as wealth levels rise, bottom out for households with wealth of around €310,000 and then start to rise again. This relationship is only indicative since the significant heterogeneity among dissavers makes it hard to draw strong conclusions. The patterns in Figures 6 and 7 point to substantially different behaviour among savers and dissavers over different wealth levels.

**Figure 8: Saving rates over wealth, by household type**



Sources: HFCS (2017) and authors' calculations.

Notes: The left panel shows observations grouped into 20 bins, each of equal size, and a fitted quadratic polynomial. The parameters of the fitted polynomial are estimated on all the observations in the dataset and are not affected by the number of bins plotted. The right panel shows the same link, distinguishing between savers and dissavers. Observations at higher wealth levels are excluded from this analysis.

Several studies argue that it is not just the level, but also the composition, of wealth that matters for household behaviour.<sup>25</sup> Ignoring liabilities for the moment, the distinction between financial

<sup>24</sup> We do not infer causality in this analysis, as wealth and saving rates are both endogenous variables and likely comprise two-way causality.

<sup>25</sup> See, for instance, Kaplan and Violante (2014) and Kaplan et al. (2018).

and real assets is important as they are generally considered as liquid and illiquid assets, respectively. Consider two household types, both with high wealth. The household that stores most of its wealth in liquid assets, such as bank deposits, is better able to adjust to bad economic shocks that it might experience. This is not the case for the household that holds most of its wealth in illiquid assets such as property, since liquidation is costly and takes time. These two households then will react differently to the same hypothetical bad shock. In the context of saving, the household with plenty of liquid assets will draw down on its wealth and keep expenditure relatively unchanged, while the household with mostly illiquid wealth will adjust to the shock by lowering expenditure since it cannot freely draw down from its stock of real assets. Consequently, the latter household is referred to as 'wealthy hand-to-mouth' in studies on household heterogeneity (Kaplan et al., 2014). Liabilities, on the other hand, can obfuscate the story somewhat. Since illiquid assets can be pledged as collateral, wealthy hand-to-mouth can borrow funds against such collateral and its expected future value, and can therefore still use this financing to absorb the economic shock, albeit at an added cost.

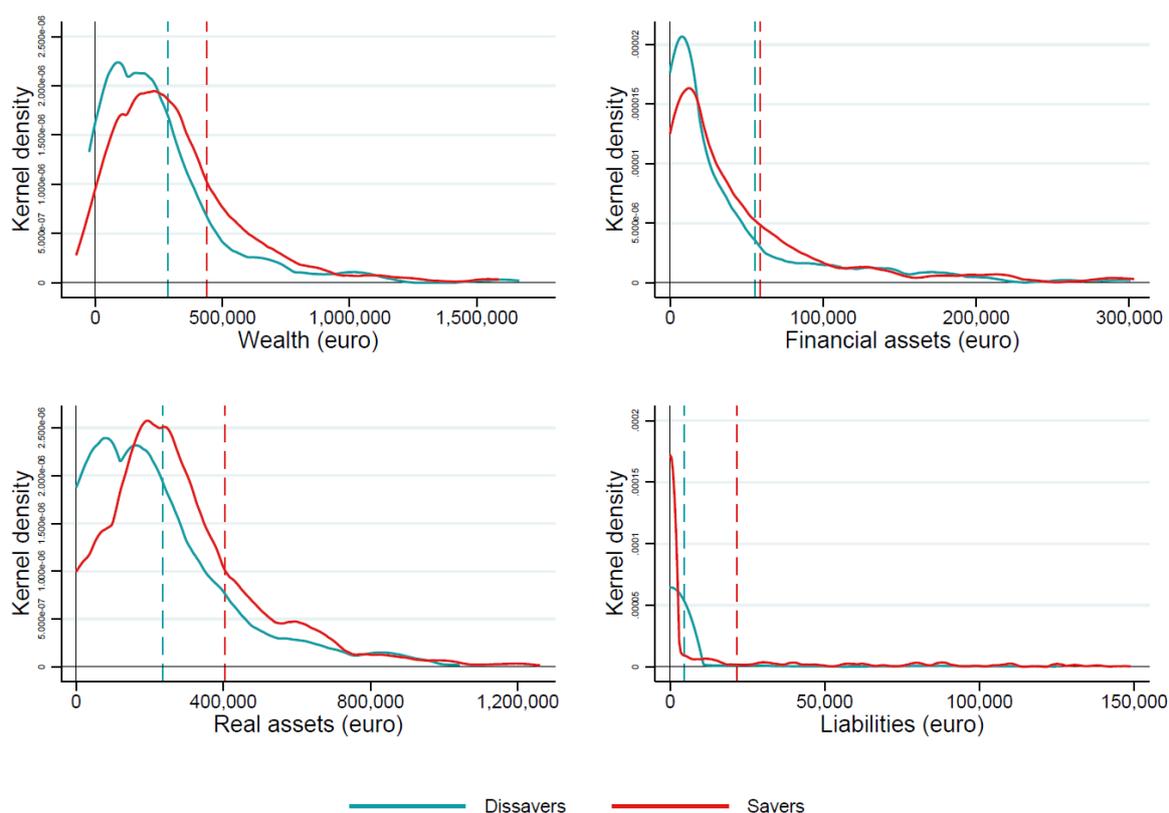
We now show the wealth distribution of households in Malta, again based on the 2017 HFCS data and splitting the sample into savers and dissavers. The top left panel in Figure 9 shows that the wealth of both savers and dissavers is positively skewed, with a small number of millionaire households in the HFCS sample. This is in line with the point made above that dissavers span the entire wealth distribution. Another observation is that a few savers and dissavers have negative wealth. However, the key observation from this figure is that savers tend on average to own more wealth than dissavers, which we verify with statistical tests.

Turning to the composition of wealth, the top right panel and bottom left panel of Figure 9 show that the key difference between savers and dissavers is that the latter tend to have more wealth that is stored in real assets.<sup>26</sup> Savers and dissavers on average own about the same amount of financial assets, although there is a slightly higher concentration of dissavers that sit at the extremes. Bank deposits represent the majority of financial asset holdings for most households. Finally, savers on average tend to have more outstanding debt than dissavers, which is in line with the discussion on collateralized borrowing by holders of real assets. However, there are far more savers with little to no debt than dissavers.

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<sup>26</sup> Real assets include the value of all property, vehicles and businesses owned by a household, while financial assets include the value of all bank accounts, mutual funds, securities, amounts owed and pension plans. Liabilities include the value of outstanding mortgages, other loans, and overdraft balances.

**Figure 9: The composition of wealth across savers and dissavers**



Sources: HFCS (2017) and authors' calculations.

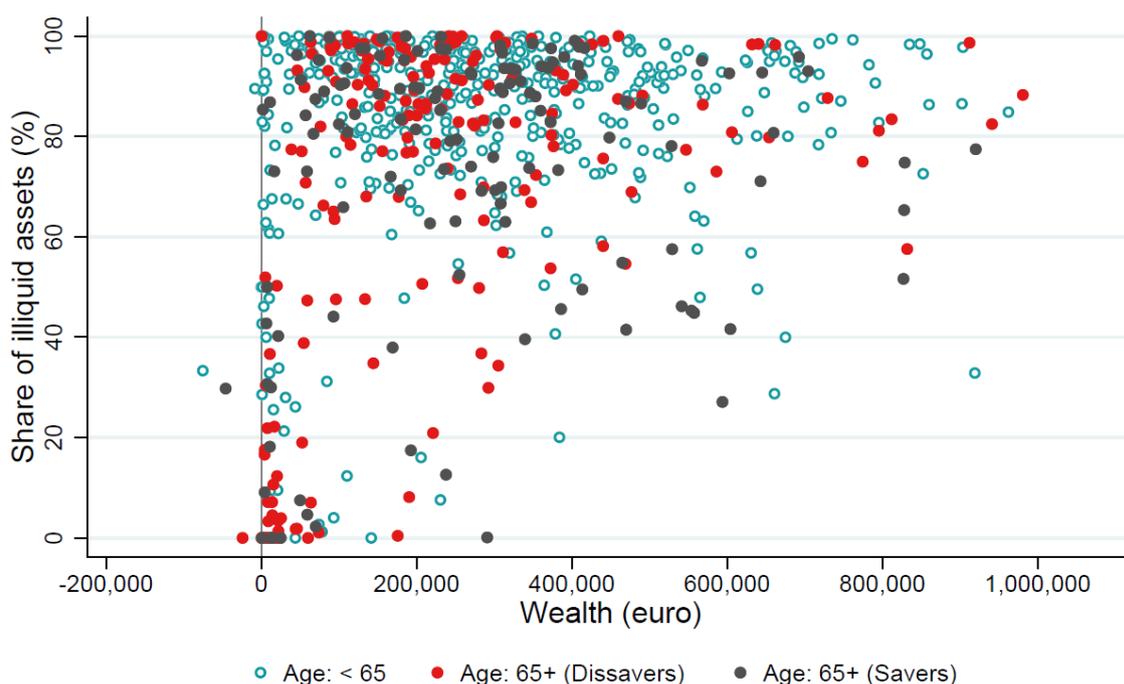
Notes: The figures show the concentration of households at different levels of wealth, financial and real assets, and liabilities. The vertical dashed lines denote the conditional mean for savers and dissavers. The difference between the means is statistically significant at the 1% level for wealth, real assets, and liabilities.

A somewhat unexpected finding in Abela and Gatt (2021), shown in Figure 1 above, is that households aged 65 and above are more likely to save than households of all other ages. This is surprising since upon retirement a household's income takes a hit whereas adjusting expenditure is not as straightforward.<sup>27</sup> Moreover, as we discuss above, the Life Cycle Hypothesis predicts that households run down at least part of their stock of wealth in old age. As discussed in section 2, there is considerable heterogeneity among households, even within the age 65 and over category, and the highest number of dissavers in both the HFCS and HBS are retired households. A missing element to this story is the wealth held by retired households, since it can explain how these households can sustain negative saving. Following the discussion above, the composition of wealth is likely to matter much more for retired households. While it is hard and costly in general to draw on wealth to finance expenditure if it is mostly tied in illiquid assets, retired households face an additional constraint; they are typically unable to obtain bank financing using real assets as collateral.

<sup>27</sup> In both the HBS and HFCS databases, median income of households aged 65 and over is around half the income of all other households, but the differences between expenditure of these two age categories are not as high.

In Figure 10 we show how the share of illiquid assets, defined as the ratio of real assets to the sum of financial and real assets, varies over wealth and age. The first pattern we point out is that at high wealth levels, most of wealth is held in real assets, since there are relatively few households with wealth exceeding say €500,000 and having a low share of illiquid wealth. Even at lower wealth levels, there is significant clustering among all households at illiquid wealth shares above 80%. The second observation is again the heterogeneity across households, even within retired households which save or dissave. There does not seem to be any clear pattern between saving and dissaving households that are retired. However, there is a considerable share of retired, dissaving households (red dots in Figure 10) that hold most of their wealth in illiquid assets, whose wealth is below the median wealth for retired households of around €231,000. The finding for this group of households matters for considerations such as pension adequacy and living standards, as their low income coupled with low liquidity means that these households may find it hard to adjust to unexpected outlays. The situation may be even more pressing when a two-member household is reliant on a single pension, void of any other source of income. Moreover, high and rising longevity also means that any accumulated financial wealth must be stretched over a longer period.<sup>28,29</sup>

**Figure 10: The share of wealth held in real assets by age and wealth**



Sources: HFCS (2017) and authors' calculations.

Notes: The dots show all observations in the HFCS, categorized by age and, for households aged 65 and over, by saving status. The share of illiquid assets is defined as the ratio of real assets to the sum of financial and real assets held by households. The figure is drawn for households with wealth less than or equal one million euro.

<sup>28</sup> Statistics by Eurostat state that as at 2019, people in Malta aged 65 were expected to live for a further 21.1 years, up from 17 years in 2000.

<sup>29</sup> Data from the Statistics on Income and Living Conditions (SILC) survey show that 1-person households, both young and old, are about as likely to face difficulties to meet an unexpected expense, however a 2-person old household is more likely to have this difficulty than a 1-person young household (see Figure 14 in Appendix B). Nevertheless, these averages may mask the heterogeneity that we observe in Figure 10.

This analysis may be subject to inaccuracies in the measurement of wealth, particularly the valuation of illiquid property. In the HFCS respondents are asked to value their property. This is hard to do if the property was purchased a long time ago and not valued by an architect or real estate agent sufficiently close to the reference period of the questionnaire.<sup>30</sup> Financial assets like bank deposits and an investment portfolio, on the other hand, are much easier to value. Moreover, financial assets are less likely under-reported since they are harder to conceal unless held exclusively in cash or held abroad. Consequently, we assess further the financial situation of old dissavers by looking at their stock of liquid assets. In Figure 11 we plot the ratio of the stock of financial assets to the excess of expenditure over income for households aged 60 and over. This ratio shows how many years of dissaving these households can finance through their pot of liquid savings. The implicit assumption in this ratio, which we also highlight as a caveat, is that households will keep the same level of dissaving registered in 2017 throughout the future.<sup>31</sup> This is not necessarily the case, since households can adjust their expenditure patterns as their financial situation changes. Nevertheless, we show in Figure 12 that this is not a strong assumption. Dissavers do not cut back too much on expenditure as they get close to and following retirement. Savers, on the other hand, significantly cut back on their expenditure as they age.

To make sense of the ratio plotted in Figure 11, we also superimpose average life expectancy at each age as at 2017. We note that while, again, there is a significant element of heterogeneity across households, a large share have liquid assets which will finance less than 10 years of these households' current expenditure pattern. All observations that fall below the life expectancy line denote a situation in which, at the current rate of dissaving, households will run down their liquid reserves 'too quickly'. This is particularly the case for households in their early and mid-60s, which require more than 20 years' worth of dissaving in financial assets to sustain their behaviour, but most have less than 10 years' worth. This finding confirms the discussion above that a share of old-age households will find it hard to adjust to unanticipated outlays unless they can turn to their stock of illiquid wealth.

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<sup>30</sup> The specific question relating to households' main residence is: "*What is the value of this property, i.e. if you could sell it now how much do you think would be the price of it?*". Similar questions are asked about other valuables.

<sup>31</sup> Another simplification we make is to ignore the role of inflation in lowering the real value of the stock of financial assets, which may be countered by any financial return that these assets generate, which we also ignore in our computations in Figure 11.

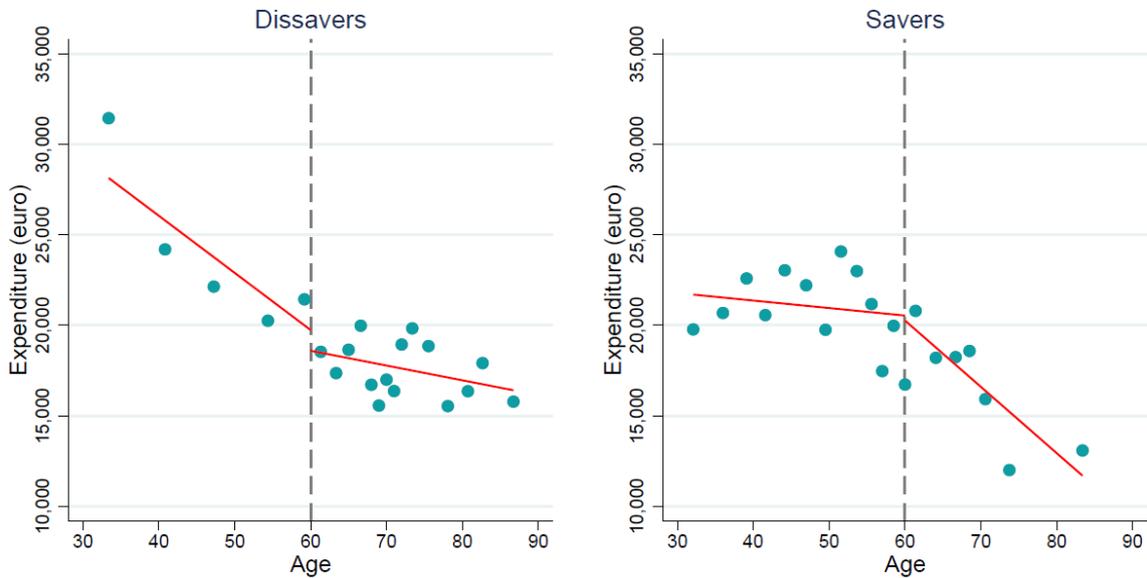
**Figure 11: The potential duration of financing by dissavers aged 60+**



Sources: HFCS (2017), Eurostat and authors' calculations.

Notes: The dots show all observations in the HFCS for households aged 60 and over who dissave. Life expectancy is the expected number of years to live at each age, as at 2017. Figures for life expectancy beyond 85 are extrapolated.

**Figure 12: Expenditure patterns over age**



Sources: HFCS (2017) and authors' calculations.

Notes: Both panels show observations grouped into 20 bins, each of equal size, and a fitted linear regression, with a discontinuity at age 60. The parameters of the fitted lines are estimated on all the observations in the dataset and are not affected by the number of bins plotted. The main patterns are insensitive to the cut-off for the discontinuity around 60.

Home equity release schemes help reduce excessive reliance on financial wealth while preventing immediate forced liquidation of property, and exist in countries such as the United Kingdom. It is also appealing as it circumvents the issue of indivisibility of property. Such a scheme was launched in Malta in 2019, allowing households aged over 60 to liquidate up to 60% of the value of the property through a loan with a local bank. Although the scheme requires heirs to sell the property and/or settle the loan within three years of the owner's demise, it has an in-built guarantee to protect heirs from negative equity should the value of the property as sold fall below the outstanding value of the loan. This equity release scheme can therefore buffer against unexpected outlays such as on health, as well as finance high price-tag expenditure such as vacations, which would otherwise be outside of that household's reach. Such schemes, however, may reduce somewhat the incentive for younger cohorts of the population to enrol in private pension plans, maintaining pressure on government pensions as the main source of future income following retirement.<sup>32</sup> Therefore, efforts to encourage adequate saving during households' working years through various saving vehicles as well as occupational and personal pension schemes should continue.

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<sup>32</sup> In fact, in a supplement to a policy document written by a working group on pensions in 2010, the use of equity release schemes was described as a complement to, and not a substitute for, Second and Third Pillar pension schemes (New Pensions Working Group, 2010).

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## Appendix A Logit estimates

Table 4: Benchmark logit model using HFCSs data

	(1)	(2)	(3)	(4)	(5)
Income Bottom quintile	-0.577***	-0.572***	-0.574***	-0.576***	-0.579***
Income Fourth quintile	-0.383***	-0.371***	-0.372***	-0.364***	-0.366***
Income Third quintile ( <i>benchmark</i> )					
Income Second quintile	0.204***	0.217***	0.214***	0.220***	0.217***
Income Top quintile	0.225***	0.238***	0.236***	0.242***	0.240***
Age 25-39	0.082*	0.083*	0.08	0.072	0.071
Age 40-54 ( <i>benchmark</i> )					
Age 55-64	0.087**	0.074*	0.076*	0.084**	0.088**
Age 65+	0.094**	0.088**	0.089**	0.098**	0.100**
Emp./Self-emp. ( <i>benchmark</i> )					
Unemployed	0.034	0.046	0.038	0.06	0.056
Retired	-0.043	-0.039	-0.043	-0.047	-0.05
Inactive	-0.001	0.007	0.005	-0.007	-0.008
Low Education	-0.043	-0.046	-0.048	-0.05	-0.052
Medium Education ( <i>benchmark</i> )					
High Education	-0.068	-0.066	-0.069	-0.055	-0.057
Single	0.077**	0.073*	0.072*	0.068*	0.067*
Married ( <i>benchmark</i> )					
Sep./Wid./Div.	0.06	0.057	0.059	0.061	0.062
Owned without mortgage ( <i>benchmark</i> )					
Owned with mortgage	0.049	0.035	0.024	0.033	0.028
Rented	0.011	0.024	0.012	0.041	0.03
Used free	0.017	0.026	0.007	0.035	0.019
No second house ( <i>benchmark</i> )					
Owns second house	-0.06	-0.054		-0.049	
No. of adults	0.017	0.014	0.012	0.014	0.012
No. of children (age <16)	-0.013	-0.015	-0.013	-0.016	-0.014
Wealth Bottom quintile		0.012	0.028		
Wealth Fourth quintile		0.058	0.062		
Wealth Third quintile ( <i>benchmark</i> )					
Wealth Second quintile		0.068	0.065		
Wealth Top quintile		-0.008	-0.018		
RA Bottom quintile				-0.055	-0.046
RA Fourth quintile				0.018	0.016
RA Third quintile ( <i>benchmark</i> )					
RA Second quintile				0.009	-0.001
RA Top quintile				-0.045	-0.057
FA Bottom quintile				0.004	0.008
FA Fourth quintile				0	0
FA Third quintile ( <i>benchmark</i> )					
FA Second quintile				-0.03	-0.029
FA Top quintile				-0.065	-0.068
Observations	883	879	879	883	883
Log-Likelihood	-51,528.3	-50,599.9	-50,794.6	-50,628	-50,783.7

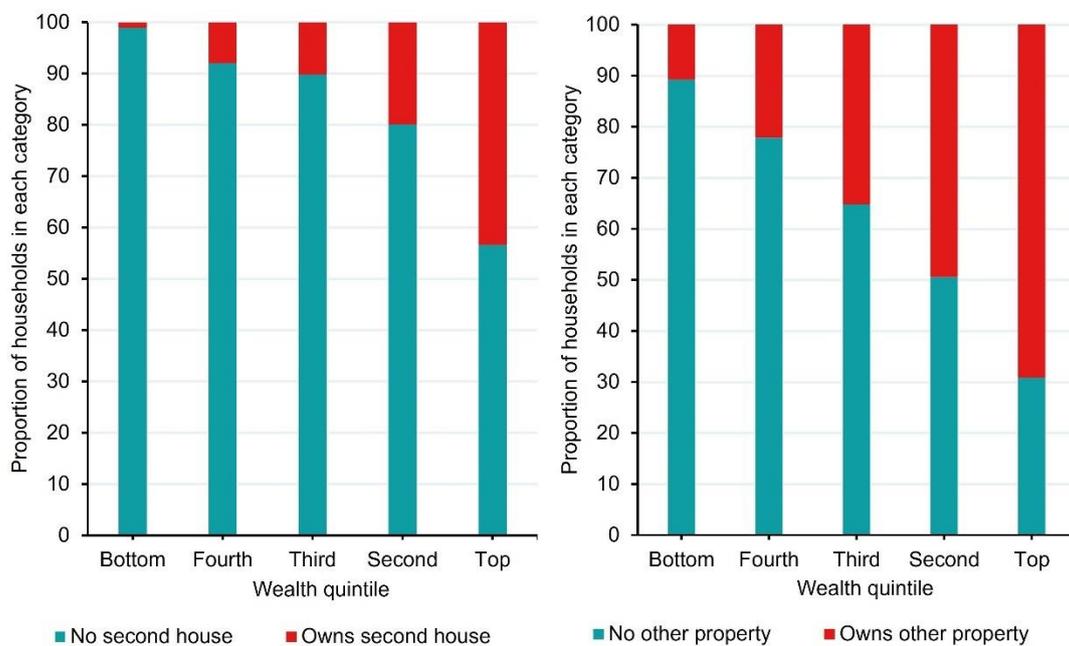
Sources: HFCS (2017) and authors' calculations.

Notes: \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01. Average Marginal Effects relative to baseline household.

Table 4 tabulates the results from logit regressions using HFCS data. Model (1) replicates as closely as possible the benchmark model in Abela and Gatt (2021), bar two variables (rent of other property and type of residential property occupied) which are unavailable in the HFCS dataset. Wealth is added to the model in equation (2), initially together with the variable for ownership of other property, which is dropped in equation (3). Models (4) and (5) replicate (2) and (3) respectively but replace wealth by real assets (RA) and financial assets (FA).

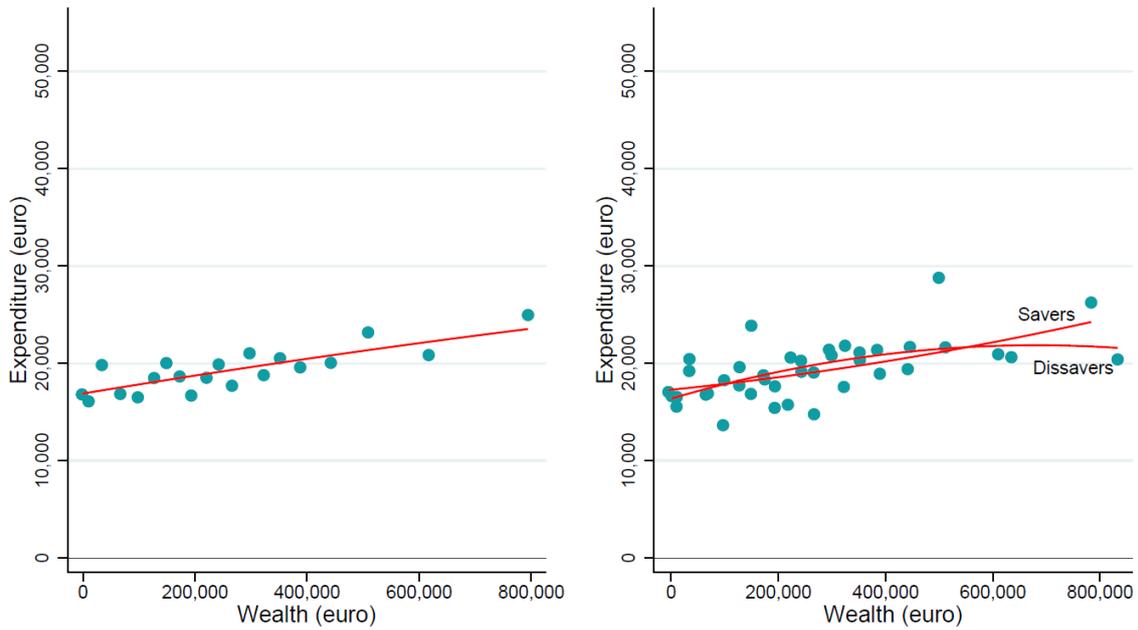
## Appendix B Other figures

**Figure 13 - Ownership of second houses and other property by wealth quintile**



Sources: HFCS (2017) and authors' calculations.

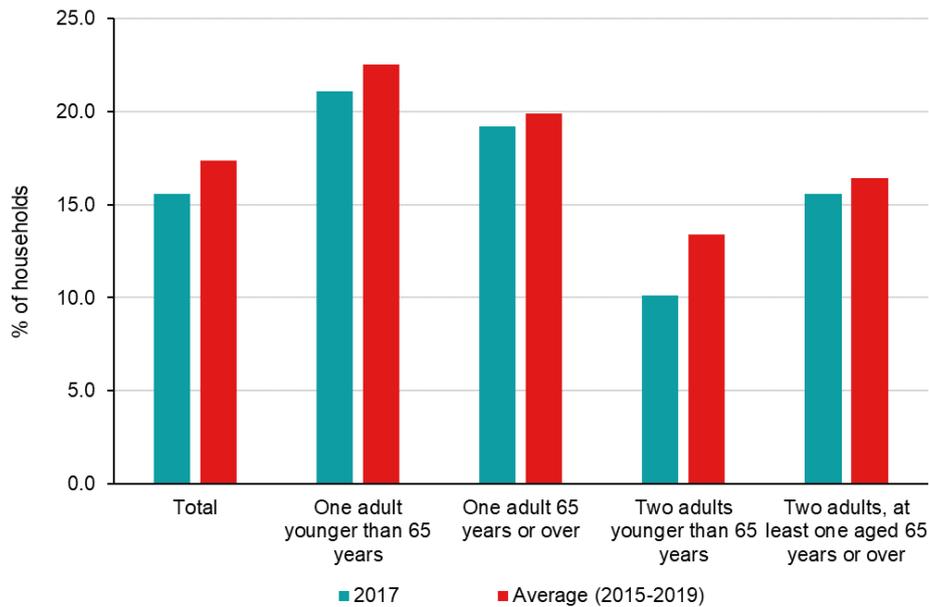
**Figure 14 – The relationship between expenditure, wealth and saving**



Sources: HFCS (2017) and authors' calculations.

Notes: The left panel shows observations grouped into 20 bins, each of equal size, and a fitted quadratic polynomial. The parameters of the fitted polynomial are estimated on all the observations in the dataset and are not affected by the number of bins plotted. The right panel shows the same link, distinguishing between savers and dissavers. Observations at higher wealth levels are excluded from this analysis.

**Figure 15: Inability to meet unexpected financial expenses**



Sources: EU-SILC and authors' calculations.

Notes: The bar chart shows the share of households that are unable to meet unexpected financial expenses, by household age and size, compared to the economy-wide average (Total). The figures for 2017 and averaged over a 5-year period around the 3<sup>rd</sup> HFCS wave (2015-2019).