Health Status and the Saving Behaviour of Pensioners
Evidence from Romania

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Abstract

This paper presents evidence on the impact of health related variables on the saving rate of Romanian retired households. With universal public health insurance coverage, a pay-as-you-go pension system and more than 98 per cent of the households owning the house they live in, retired households continue to save, with saving rates increasing faster with the number of healthy members relative to those with a different health status. After controlling for healthcare costs, the positive effect of the health status variables on savings reflects the influence of the precautionary motive alone, as households with at least one ill member during the interview month also save more. Furthermore, once health related variables are controlled for, life expectancy becomes less important in driving savings at old age. Naturally, current healthcare costs like hospital stays and medicines negatively affect the saving rate.

Introduction

According to the classic version of the life cycle model, a retired individual should start dissaving in order to to exhaust all the assets accumulated prior to retirement during the remaining life span. The empirical evidence supporting this prediction is rather mixed. Using repeated cross sectional data and controlling for cohort effects, Attanasio (1994) does not find asset decumulation for the elderly using United States data, while Borsch-Supan (1992) present evidence of substantial wealth accumulation for elderly above 70 using German data. The explanation provided points towards the declining consumption of pensioners who, given the relatively universal coverage of mandatory health insurance and the generosity of the pension system, cannot exhaust their annuities (Borsch-Supan, 1992). Hurd (1987), using Retirement History Survey data, finds elderly do dissave in agreement with the classical life cycle model. Using similar panel data, Alessie et al. (1999) reach an opposite conclusion in case of Netherlands where elderly households keep accumulating wealth. As for the main motives to save, it is found that the health status, bequests and life expectancy are positively correlated with savings, with the effects being stronger among higher income households. The precautionary motive is concave as a function of wealth, reflecting different types of insurance (e.g. health, disability, Social Security) already in place for the low income households and the existence of buffer stocks for the most wealthy ones.

The existence of bequests is among the main reasons put forward in order to explain the empirical evidence against the above mentioned prediction of the classical version of the life cycle model. Using data from the 2000 Health and Retirement Study, Lee and Horioka (2004) point out that 30.4 per cent of the interviewed families are planning to leave a 100 000 USD bequests with a 100 per cent probability, monetary transfers among generations being also important. While the above mentioned studies consider the altruism as the main reason behind bequest, they can result also in an accidental and unintentional manner given the uncertainty over the remaining life span (Abel, 1985).

The existence of health insurance should, ceteris paribus, lead to lower wealth levels, as it reduces the amount of risk a household faces, weakening thus the strength of the precautionary motive. Gruber and Yelowitz (1999) show that for eligible low income households, Medicaid reduces savings. Starr-McCluer (1996) reaches an opposite finding using Survey of Consumer Finances data, pointing to a strong relationship between insured households and wealth holdings. When there is control for selectivity, the evidence supporting lower savings as a result of health insurance is at most mixed. However, one should take into account when contrasting

the results of the above-mentioned studies that while the first one looks mostly at public insurance schemes, the second investigates the effect of private insurance, and excludes households where the head is retired or over 65 years old. Focusing on elderly singles and excluding the bequest motive, Nardi et al. (2006) show that while increasing fast with age, extremely high medical expenses at high age have a significant contribution in explaining the saving pattern of elderly. Furthermore, the existence of social insurance programs (e.g. Medicaid) decreases the savings of the elderly, even for those with high income.

The analysis presented in this paper focuses on the impact of health status and healthcare cost variables on the saving rate of retired households from Romania. We exploit a detailed individual-level dataset coming from the Household Budget Survey (HBS), having as a distinctive feature extensive health related information for each household member.

In a society with universal public health insurance coverage, a pay-as-you-go (PAYG) pension system and more than 98 per cent of the households owning the house they live in, we find that retired households continue to save, with saving rate not only increasing with the number of household members, but also increasing even faster with the number of healthy ones. After controlling for healthcare costs, the effect of the health status variables on savings reflect the influence of the precautionary motive alone (saving more to prepare for further unexpected health deterioration), as households with at least one ill member during the interview month also saved more. To reinforce this finding, once we control for health related variables life expectancy becomes less important in driving savings at old age. Naturally, current healthcare costs like hospital stays and medicines negatively affect the saving rate.

The paper is organized as follows: the next section introduces the dataset and defines the variables used in our study, while the following section presents the results, highlighting the impact of health status and healthcare costs on pensioners' saving rate. The last section concludes.

Data and variables

Our empirical analysis is based on Household Budget Survey (HBS) data, recorded monthly by the Romanian National Institute of Statistics (NIS) between 2004 and 2008. Overall, there are circa 37,440 households surveyed per year (*non-overlapping* monthly samples of around 3120), with relatively high answer rates.[1]

In dealing with outliers, most probably resulted from income underreporting, one should also take into account the following two aspects: first, both very high and very low saving rates might reflect positive or negative transitory income shocks, and second, data treatment should not lead to a large number of observations being lost. Thus we followed Tukey (1977) and excluded around 6.1 per cent of the original number of households, namely 5.3 per cent from the left tail of the distribution and 0.8 per cent from the right one.[2]

The research is restricted to households consisting only of retired individuals, aged between 46 and 84.[3] Their saving behaviour is different compared to that of the rest for at least the following reasons: they have a lower life expectancy, have a constant income stream from pensions, and face higher and sometimes unexpected medical expenditures. The households in our subsample therefore fall in one of the following three categories: those consisting of one pensioner only, those consisting of two pensioners-most often head and spouse, and those with three or more pensioners-head, spouse, and relatives. There are 47,317 households fitting these criteria during the analysed period.

Besides registering detailed households characteristics, a distinctive feature of our dataset is it captures extensive information on the health status of each household member. More precisely, for each member it records whether he/she is handicapped, suffers of a chronic disease, was ill during the interview month, was hospitalized (during the month or the past year), the length of hospital stays in the previous 12 months, and whether they took medicines or underwent any regular medical check-ups during the interview month. Medical expenses, above and below the counter, are also recorded according to their destination: medicines, routine check-ups or the cost of hospital stays.

More than 98 per cent of the retired households in our sample own the house they live in, being their most important asset. Similar to other ex-socialist countries, owning a house does not reflect an optimal saving decision, but rather a arbitrary, and sometimes forced, allocation of capital. In terms of value, the house represents around 95 per cent of a family's wealth (NBR, 2008). Therefore this asset plays a dual role: it brings utility (shelter) and is the most important component of a family's bequest. If older households dissave or run down their assets, then they should start with the house: move in a smaller house and spend the difference in value. However, as many authors point out, this does not happen for a number of reasons: first, houses are not a divisible asset and the housing market is not very liquid, and second, there are large transaction costs associated to selling/buying or swapping a house.[4] However, we would expect to see a shift towards renting, but British data studies (Ermisch and Jenkins, 1999), find little moving (except

for widows) and a slight move towards renting. Venti and Wise (2000) find that the decrease in house value after 75 comes from those who experience a shock such as the loss of a spouse. In the Netherlands, there is no shift in consumption away from housing (Alessie et al., 1999). In the same vein, Chiuri and Jappelli (2006) find that in 17 Organisation for Economic Co-operation and Development (OECD) countries the ownership rate falls slightly after age 70, and at a rate of about one percentage point per year after age 75.

Third, moving house often means moving away from children, relatives, or friends, so away from the old family's potential support network. Besides, Heiss et al. (2003) maintain that sentimental attachment to a particular house and substantial transaction costs in moving from home ownership to renting (i.e. rents going up because of inflation), make elderly families retain housing beyond what would be optimal were adjustments costless. Fourth, the house is the most valuable asset a family has, so it is left as a bequest. In this respect, Haffner (2008) finds that in Netherlands saving other wealth (except for house equity) with the aim to leave an inheritance was not so common (and also that moving house was not popular at a very old age). Chiuri and Jappelli (2006) argue that strategic bequest motives suggest transferring wealth at the end of one's life and that credit market imperfections (transaction costs in selling the house, indivisibilities, or imperfections in the rental market) are an explanatory factor for international differences in the aggregate saving rate of the old generations.

Defining savings

The analysis unit was chosen to be the household and not the individual. First, detailed information on each member's income and expenditures were unavailable, making the recovery of individual saving rates impossible. Second, as Gibson and Scobie (2001) argue, some spurious savings estimates might result from an ex-post allocation of expenditures to each individual. Furthermore, it is highly probable that saving decision are taken at household and not individual level. However, this does not imply that certain individual information (e.g. health status, education) will not be used throughout the analysis where deemed relevant.

Similar to Gibson and Scobie (2001), savings are defined here as the difference between net income and expenditures, the latter adjusted for durables and capital goods and services.[5] The reasons for excluding from expenditures the amount invested in durables and capital goods and services are twofold: first, it is an investment that provides utility over many years, and second, to avoid extremely

large negative saving rates. One of the reasons families save is to buy a durable good, and if the purchase is made during the interview month, their savings drop considerably. Consequently, the saving rate is defined as total savings, as derived above, divided by net family income.[6]

The median[7] saving rate for the 2004-2008 period is 7.9 per cent, with median savings standing at 28.1 RONs per month[8] , as reported in table 1 below. Similar to other works using cross-sectional data for pensioners (e.g. (Alessie et al., 1999)), while on aggregate they continue to save, 32.4 per cent of the households had negative saving rates in a certain month of the period analysed.[9]

< Insert Table 1 about here >

The share of expenses on capital and durable goods and services in total savings, computed as the ratio of mean values, decreased over time, representing on average around 22.7 per cent of savings (9.4% for durable goods and services and 13.3% for capital) over the period under study. However, the median values for both durables and capital goods and services are zero for each year considered. In addition, on average only 14.4 per cent of the households purchased such goods in the interview month.

Given that the questionnaire is constructed in such a way that the monetary inflows equal the outflows at household level, the magnitude of savings can be recovered from the variation in monetary flows at household level. The components of this alternative way of computing savings are presented in Table 2 below.

< Insert Table 2 about here >

With average savings for the 2004-2008 period standing at 70.0 RONs (Romanian Lei), a vast contribution comes from the variation in cash between the beginning and end of the month at household level, namely 62.9 per cent (44.0 RON). Looking instead at the median variation in cash, although increasing from year to year, it stands at much lower values, namely 15.6 RON, being the only one among the variables presented that is different from zero.

Variable definitions

The names and the definitions of the variables used in the empirical exercises are presented in Table 3 below. We capture life expectancy by using the figures provided by Eurostat for Romania - separately for men and women. This variable

takes different values in each of the considered years for individuals aged at most 85, explaining thus why retired families with a member over 85 were dropped from the sample. To control for possible different saving propensities of the individuals in the house we introduce the following variables: (a) maximum life expectancy between the head of the household and the spouse, and (b) the gap between minimum and maximum life expectancy in the household. These latter values are also defined over a set consisting of household's head and spouse. If the household consists of only one individual the latter variable is zero.

< Insert Table 3 about here >

A similar approach was used for educational attainment. Usually in the literature the household head's educational level is used as a proxy for the entire household. There are at least two problems with this measure: first, the head might not be the most educated person inside the house, the latter being the one assumed usually as having a greater role in taking the saving decision; second, using household head's education as a proxy does not control for any heterogeneity in education across members. As Lundberg and Ward-Batts (2000) show there is a positive correlation between the relative education of wives and wealth. We try to reconcile these two problems by using: (a) a variable which reflects the maximum educational level between the household head and the spouse, and (b) an educational gap defined as the difference between maximum and minimum educational attainment, with the choice set again composed of the head and the spouse. We expect that the higher the gap, the lower are the savings at household level.

In order to better capture the different types of household income we separate it into net income from pensions and income from other sources than pensions. The income share of the latter is around 11.5 per cent. In doing so we aim to separate the exogenous income component from the endogenous one. Given the PAYG pension system existent in Romania[10] , the current pension income does not reflect previous optimal savings decision but rather the financing coming from the currently working generation. Furthermore, arbitrary political decisions frequently affected both the contributions and the pension levels throughout the transition period.

In addition we include two dummy variables reflecting remittances received from and sent to other individuals outside the house as we intend to capture possible bequests motives. The share of remittances received in total net income is around 3.6 per cent, while the share of remittances sent to other than household members in total expenditures is 1.9 per cent.[11] We intend to account for the possibility that

households receiving financial aid from non-household members (children, relatives, friends) exhibit a stronger bequest motive compared to those not receiving any remittances.

We also take into account the possibility that households save in order to make big-ticket purchases. The endowment with durable goods for each household is captured by dummy variables accounting for the ownership of a minimum number of goods for each of the following four categories: cooking, cleaning, electronics and auto (from a list of 26 goods considered in the questionnaire).

As mentioned before, detailed information on the health status of household members is available. In our empirical exercise we check for the impact on savings of health status of the family and the effect of healthcare cost related variables (dummies for the number of days spent in hospital by all family members and ones reflecting how many members of the family took medicines, vitamins or had regular medical check-ups during the reference month). In order to capture the impact of health status variables we divide the number of pensioners in the house in healthy, being chronically ill and/or being ill in the reference month.[12]

Besides the precautionary motive, accounting for the impact of healthcare costs is justified by the weight of current medical expenditures in total monthly expenditures, namely 5.6 per cent on average, as shown in Table 4 below. A similar figure computed only for the households facing positive medical expenditures in a certain month is 10.3 per cent, with around half of the investigated households facing such expenditures. Ten per cent of the pensioners use at least 15.6 per cent of their income to cover medical expenses, a figure close to the 20 per cent one obtained by Palumbo (1999), using US data. Karagiannaki (2009) also finds a number of channels through which the health status of the elderly affects savings: increased medical costs, increasing other types of non-medical expenditures, a subjective life expectancy effect (retirees may start consuming more after a health shock, as they adjust their life expectancy downwards), and perceptions about future health-related needs and expenses. Analysing a cross-section of retired British households, she concludes that precautionary saving dominate the reduced life expectancy effect.

< Insert Table 4 about here >

Public health insurance coverage is universally available in Romania. Although private health insurance schemes do exist for working-age individuals, no company insures individuals aged 65 or over, who make up the vast majority of our sample. As all retired individuals have access to a universal healthcare system, the existence of private health insurance is mooted in our case.

Empirical results

The empirical models presented in this section use instrumental variables (IV) estimators to explain saving rates as a linear function of the before mentioned variables. The results, except the monthly and yearly dummies, are presented in Table 5 below. To ascertain the impact of health-related variables, we introduce them in the regression sequentially. Since ordinary least-squares (OLS) regressions yield pretty similar results, we focus on analysing the IV ones and contrast them where necessary.

< Insert Table 5 about here >

Our instrumental variable approach intends to account for the possible endogeneity between temporary income and savings. As the permanent income consists only of pension income and this is based on the individual's mandatory past contributions (no private pension schemes exist in Romania before 2008), there is no potential endogeneity bias here. We used two variables to instrument for temporary income: a dummy variable reflecting whether the extra income was earned through working additional hours and a dummy variable showing the relative size of the temporary income compared to the household's neighbours (i.e. if the temporary income is above or below the average in the area).

The first instrument indicates that the retired family works more hours when faced with liquidity constraints. This reflects a temporary work effort for a family who cannot make ends meet in the interview month and will lead to an increase in family's temporary, non-pension income and, hence, in saving rate. The cash excedent/deficit at the end of the month represents the family's (dis)savings, so the saving rate does not influence the decision to work more hours. The second instrument indicates how the family's temporary income relates to that of its' neighbours from the sampling area, with more affluent than average households saving more. However, the current saving rate has no impact on the household's relative position (above/below average). The weak instrument tests show these are good instruments and significant in the first stage regressions. The Sargan overidentification test shows they are uncorrelated with the second stage residuals in every setup.

Baseline approach

The first regression does not include any health-related variables, so the benchmark is simply a retired household, not receiving and/or sending any remittances

and not owning the durable goods' categories considered. As expected, higher pension income leads to higher savings. Once we account for non-pension income's endogeneity, the marginal effect of the latter becomes significant, having a magnitude similar to that of the income from pensions.

The number of household members[13] is positively and significantly related to savings, with the effect only slightly lower once we account for the endogeneity of income other than pensions. This is consistent with the literature: Alessie et al. (1999) finds using Dutch data that the median wealth holdings of married couples (94.0% of the two-person households in our sample) are approximately four times higher than those of widows (87.3% of single pensioners households in the present sample). Furthermore, Hurd (1990) points out that the poverty rate among the elderly widows is considerably higher relative to the others. Given that differences in incomes per capita are not high across different households sizes[14] , our findings are explained by a number of fixed costs (e.g. house maintenance, heating) that make living alone more expensive, while bigger households also enjoy positive externalities (e.g. cooking for the entire family).

In the baseline regression more educated households save less, which is consistent with previous findings indicating higher wealth accumulation prior to the pension period for more educated households (see (Euwals et al., 2004) and (Starr-McCluer, 1996)). As for the educational gap, computed as the difference between the maximum and the minimum educational level (with the head of the household and the spouse being the choice set), the higher it is, the smaller the saving rate. Using Health and Retirement Survey data Lundberg and Ward-Batts (2000) reaches a similar conclusion, with a positive correlation between the relative education of wives and wealth. The latter is confirmed also by Meier et al. (1999) on Austrian data, who revealed a higher influence of the more educated spouses on the saving decision process.

The investment motive of saving is still strong, as reflected by the fact that households owning durable goods save significantly less than those not owning them, with the effect being marginally stronger once we account for the endogeneity of non-pension income. The saving rate is a concave function of life expectancy for the pensioners sample considered, computed here as the maximum life expectancy between the head of the household and the spouse. Furthermore, the higher the gap between minimum and maximum life expectancy in the household (defined over a set consisting of household's head and the spouse) the lower is the saving rate. Lundberg and Ward-Batts (2000) instead does not find a significant impact of the age difference on wealth, using data from the Health and Retirement Survey.

Using data from the 2000 Health and Retirement Survey, Lee and Horioka (2004) point out that monetary transfers among generations are important: the probability of the next ten years parents to children transfers above 5000 US dollars (USD) is 35.7 per cent, while the similar figure for the reversed flow is only 9.1 per cent. At aggregate level, Nardi (2004) shows that private inter-generational wealth transfers (bequests, inter-vivos) accounts for approximately 60 per cent of the total US wealth, while the bequests similar figure for Sweden is 51 per cent. In our sample, the coefficients on dummy variables reflecting the financial aid received/given from/to family or friends are both negative and significant, with the impact being substantially stronger once the endogeneity of income from other sources than pensions is taken into account. Although captured here in cross sectional data these effects could, for example, occur both across the time for the same family: pensioners might transfer money to their children in expectation that the children will return the help if needed.

Adding health status variables

In the second regression, the following variables reflecting the health status of the family were included: how many members of the households were ill during the interview month, and how many of them suffer of a chronic disease? The benchmark here is a retired household in good health, with no members being ill or chronically ill, not receiving and/or sending any remittances and not owning the durable goods categories considered. We therefore introduce four new variables in the regression, dividing the number of household members into: (1) healthy, (2) ill during the month and chronically ill, (3) chronically ill, but not ill during the month, and (4) ill, but not chronically ill. Introducing these variables and dropping the total number of pensioners in the house changes the conclusions presented in the previous subsection in several significant ways.

First, once the number of household members according to their health status is decomposed, the saving rate not only is increasing in the number of household members, but also it increases even faster with the number of *healthy* members. Households with at least one ill member during the interview month (but not chronically ill) also saved more, reflecting a precautionary motive arising from unexpected medical expenditures, but the marginal effect is smaller than in the case of an extra healthy member. Furthermore, the marginal effect of one extra member who is chronically ill but was not ill during the interview month has a negative and significant impact on saving rate (while being insignificant in the

OLS regression) , reflecting probably the effect of extra expenses induced by following certain regular treatments while being chronically ill. Households with at least one member ill during the month and chronically ill did not appear to save more or less compared to the benchmark, with the effects mentioned above (precautionary and extra-expenses) possibly cancelling out each other.

Second, life expectancy becomes less significant: it is insignificant in the OLS case and only at five per cent significance level has the life expectancy squared a negative, and relatively half as magnitude, impact on saving rates. A similar evolution is found in the case of life expectancy gap. These results come to confirm the literature in asserting that it is not life expectancy per se that drives saving at old age, but the health status (which in turn affects the household's life expectancy– see, for example, Karagiannaki (2009)). We believe this motive is even stronger than the bequest one because the most important asset of a household is the house it lives in (98% of households own it) and this will be left to children. A retired household has therefore little reason to save and accumulate more financial wealth in order to leave bequests.

Third, similar with the previous results, the marginal impact of non-pension income is significant but not different (in a statistical sense) compared to that of income from pensions. Last but not least, once we account for health status the negative impact of education-related variables on savings diminishes but remains statistically significant.

Adding healthcare cost variables

The third setup introduces variables reflecting healthcare cost: dummy variables reflecting the total number of days spent in hospital by all family members in the last 12 months and how many members of the family took medicines, vitamins or had regular medical check-ups during the reference month. The benchmark in this case is a retired household in good health that did not take any medicines or had any check-ups.

The results are shown in the last column in Table 5. While the impact of the number of days household members spent in hospital during the past 12 months is statistically insignificant in the OLS estimation, once we account for the endogeneity of non-pension income it has a negative and significant impact on saving rate. Although the negative impact increases with the number of days spent in hospital by family members (except if the duration is higher than two weeks for

which the impact is lower), one cannot reject the null hypothesis that the marginal effects are similar, indicating a linear negative effect of the duration of being hospitalized on saving rates.

The saving rate decreases with the number of family members taking medicines and/or undergoing medical check-ups in the reference month. Households with one member on medication in the reference month reduce their saving rate by 2.6 percentage points, while those with two or more members by 3.4 percentage points. These results are expected, as medication and regular check-ups costs account for an important share in the budget of retired households.

Once we control for healthcare costs, the effect of health status variables on savings reflect the influence of the precautionary motive alone (saving more to prepare for further unexpected health deterioration). In a consumption decision model augmented with information on the coefficient of relative risk aversion from the Panel Study on Income Dynamics (PSID) data and subjecting households to potential health related financial shocks during retirement period, Palumbo (1999) points out that precautionary savings resulting from uncertain medical expenses represent around seven per cent of the annual consumption for a pensioners household in its' early retirement period.

Health status variables that reflect illness during the reference month have a significant impact on savings. The only exception is being chronically ill but not ill during the reference month, which does not lead to higher savings - these families did not face any unexpected medical outlays during the month and the impact on savings is weak. Adding healthcare cost related variables also leads to a marginal impact of non-pension income higher[15] than that of income from pensions.

Conclusions

Healthcare is an important determinant of savings for elderly households, even more so in a society with universal public health insurance coverage and a pay-as-you-go pension system. The effect can propagate through a number of channels: increased medical expenditures, subjective life expectancy and perceptions about future health-related expenses. Our paper investigates this effect using a detailed individual-level dataset with extensive information on the health status and healthcare costs for each household member (handicaps, chronic and other illness, hospital stays, medicine intake and medical expenses). Another advantage of our dataset is the vast majority of the household income (around 88.5%) comes

from public pensions. Because pensions reflect mandatory past contributions and private pensions are inexistent, there is little reverse causality between the saving rate of the elderly and their income. Moreover, as all retired individuals have access to a public universal healthcare system, they all get more or less the same level of healthcare, so we are able to isolate the impact of pensioners' health status and healthcare costs on saving.

We find that higher income leads to higher saving rates. After controlling for the endogeneity of non-pensions income and accounting for the impact of health status and healthcare cost related variables, retired households save marginally more from the non-pensions income. However, both receiving and giving financial aid from/to family or friends have a negative and significant impact on savings, this being substantially stronger once the endogeneity of non-pension income is taken into account. Although captured here in cross sectional data these effects could, for example, occur both across the time for the same family: pensioners might transfer money to their children in expectation that the children will return the help if needed.

The number of household members is positively and significantly related to savings, showing the existence of fixed costs that make living alone more expensive, while bigger households also enjoy positive externalities. Once we decompose the number of household members according to their health status, the saving rate not only is increasing in the number of household members, but also increases even faster with the number of healthy members. Households with at least one ill member during the interview month (but not chronically ill) also saved more, reflecting a precautionary motive arising from unexpected medical expenditures.

After controlling for healthcare costs the effect of the health status variables on savings reflect the influence of the precautionary motive alone (saving more to prepare for further unexpected health deterioration). Naturally, current healthcare costs like hospital stays and medicines negatively affect the saving rate. However, all the health status variables remain positively and significantly related to the saving rate.

Life expectancy is weakly significant and becomes even less significant once we include health-related variables in our regression. A similar conclusion can be drawn for the life expectancy gap among households members. These results come to confirm that it is not life expectancy per se that drives saving at old age, but the health status which, in turn, affects the household's life expectancy.

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Notes

1 According to NIS (2006) in 2004 the overall answer rate was 88.1 per cent, while in 2005 it stood at 87.9 per cent. Throughout the paper results are reported using sample weights.

2 On a yearly basis, households with (negative) saving rates lower than the first quartile minus one and a half times the interquartile range and those for which the (positive) saving rates were higher than the third quartile plus one and a half times the interquartile range were excluded from the analysis. To deal with similar problems, Denizer and Wolf (1998) and Miles (1997) use ad-hoc measures in treating outliers, with the former eliminating those with dissaving rates above 50 per cent and the latter omitting 0.5 per cent of those situated in both tails of income distribution.

3 We excluded from analysis those households with individuals that retired early, at 45 years or less, possibly for health reasons (representing less than one per cent of the cases) and those with individuals aged 85 or more as life expectancy data we use is not available for them.

4 A reverse mortgage would be a useful instrument for house-rich, cash-poor (Romanian) households to finance their consumption in their late years. However, the experience of developed financial market like the United States (US) tells us these reverse mortgages are the exception rather than the rule among elderly homeowners (Bowen-Bishop and Shan, 2008). One explanation, mentioned by Venti and Wise (2000) , is that about 90 per cent of the surveyed Americans over 55 reported that they wanted to remain in their current residence as long as possible. This instrument does not exist in Romania for a number of additional reasons: banks are reluctant to offer reverse mortgages because of the low quality of the collateral (the average house was built in 1964, median in 1961) and a

rather volatile real estate market which makes a valuation in, say, 10 years' time very difficult (the average life expectancy for the retired households in our sample is about 14 years).

5 Capital goods included as part of savings are mostly related to household, household items and car repairing services, while durables refer to furniture, household appliances, motor vehicles and parts, audio-video equipment and personal computers, and books.

6 Dividing savings by net income required the exclusion of households that reported zero or negative net income in a particular month (0.2 per cent of the initial dataset). An alternative approach employed by Attanasio and Banks (2001) would have been to divide savings by consumption, with saving rate also being defined when net income is zero.

7 Given the positive skew in the distribution of variables, we find preferable to focus on median figures when commenting the data.

8 All nominal monetary variables are reported in January 2004 units.

9 However, the yearly cumulative distributions of savings shifted to the right continuously, less and less households posting negative saving rates (i.e. from 36.7% in 2004 to 25.2% in 2008), consistent with an increase in the saving rates throughout the analysed period.

10 With a second pillar being phased in only in 2008, a gradual transition towards a defined contribution system is taking place, with part of the first pillar contribution being allocated towards the second one for those aged below 45, a category not captured in our sample.

11 The share of remittances received in net income increases substantially to 30.8 per cent, if only those households receiving such help are taken into account (11.6% of total households). The similar figure for remittances sent outside the household is 17.4 per cent, with 8.3 per cent of households offering such help through the analysed period.

12 Marital history and its quality might play an important role for the current saving behaviour, being also inter-related with the health status and life expectancy. Furthermore, the decision to marry is also related to the attitude towards risk and saving behaviour, as marriage can be seen as a tool to pool risk in face of unexpected income or health shocks. However, given the lack of longitudinal

data, needed in this case over an extended period of time or extensive information on marital history, these problems cannot be addressed in our study.

13 While the effect of the number of household members on saving may be non-linear, we chose to use this variable in our first regression in order to make comparisons easier with the other setups, where the number of household members is divided into healthy / ill during the month / chronically ill / chronically ill but not ill during the month.

14 In our sample the average net per capita income is on average 3.6 per cent higher for the two pensioner households when compared with the widow(er)s, while the latter is higher on average when compared with that of the two pensioner households by 6.0 per cent.

15 At 10% significance level.

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Table 1: Savings breakdown

	Y	C	Durables[1]	Capital[1]	C*	Savings	Saving rate(%)
	1	2	3	4	5=2-3-4	6=1-5	6/1
2004-2008							
Mean	496.5	442.3	6.6	9.3	426.5	70.0	10.0
Median	407.2	364.3	0	0	358.0	28.1	7.9
Min	14.1	12.8	0	0	12.8	-1,083.5	-55.6
Max	33,865.5	33,833.6	5,087.9	2,865.6	33,833.6	4,993.7	78.1
No. obs.[2]	47,317	47,317	2,493	4,335	47,317	47,076	47,076

[1] No. of observations for which a value different from 0 was registered in the irrespective year.

Table 2: Savings breakdown [1]

	Δcash	Δdeposits	Durables[2]	Capital[2]	Net_lending	Net_loans	Net_credit
2004-2008							
Mean	44.0	6.2	6.6	9.3	-0.6	-1.5	-1.8
Median	15.6	0	0	0	0	0	0
Min	-5,094.9	-10,751.5	0	0	-10,751.5	-1,458.2	-866,0
Max	4,837.9	3,901.0	5,087.9	2,865.6	2,075.2	3,191.2	1,573.6
No. obs.[3]	47,026	2,593	2,493	4,335	564	3,390	982

[1] The same measure of savings can be recovered as: Δcash+Δdeposits+Durables+Capital-Net_lending-Net_loans-Net_credit.

[2] No. of observations for which a value different from 0 was registered.

Table 3: Variable definitions

Variable	Definition
Life exp max, Life exp max^2	Maximum life expectancy (squared) of either husband or wife.
Gap life exp	The difference between minimum and maximum life expectancy of either husband or wife.
Edu max	The highest educational level attained by either the husband or the wife.
Gap edu	The difference between the highest and the minimum educational level attained inside a household by either the husband or the wife.
Nr. of pensioners	Nr. of pensioners inside the household (used only in the baseline specification)
Healthy pensioners	Nr. of pensioners healthy inside the household
Cron and ill, cron not ill, ill not cron	Nr. of pensioners inside the household that are cronically ill and were ill in the reference month, cronically ill but not ill during the reference month, ill during the reference month but not chronically ill.
D_cooking,D_cleaning,D_electro, D_auto	Dummy=1 if the household has a minimum endowment with such durable goods
Medication&Routine check-ups: 0 members, 1 member, $>$1 member	Dummy=1 if none/one/more than one of its' members took preventive medication/had a routine check up in the reference month
Days in hospital: 0, $<$1 week, 1-2 weeks, $>$2 weeks,	Dummy=1 if the cumulated nr. of days spent in hospital by household members in the last 12 months were 0, up to 1 week, between 1 and 2 weeks, more than 2 weeks.
Pensions income	Net income from pensions at household level
Non-pensions income	Income from other sources than pensions
Remittances received	Dummy==1 if there were positive receipts from other than household members in the reference month
Remittances given	Dummy==1 if there were positive payments to other than household members in the reference month

Table 4: Average medical expenditures[1]

	2004	2005	2006	2007	2008	2004-2008
Average medical expenditures/income(%)						
Mean	5.9	5.9	5.5	5.4	5.1	5.6
Median	1.1	2.1	1.4	1.7	2.1	1.7
No. obs.[3]	9,016	9,318	9,427	9,501	10,055	47,317
Average *POSITIVE* medical expenditures/income(%)						
Mean	11.2	10.6	10.6	10.0	9.0	10.3
Median	8.2	7.3	7.5	7.4	6.6	7.3
No. obs.[3]	4,551	4,995	4,751	4,901	5,537	24,735

[1] Represents the sum of expenditures on medicines, routines check-ups and hospitalisation.

Table 5: IV estimation results

		Baseline	+ Health status	+Healthcare costs
Pensions income		0.0208***	0.0224***	0.0225***
Non-pensions income		0.0196***	0.0271***	0.0282***
Remittances				
	received	-5.1078***	-5.0841***	-5.0538***
	given	-3.9606***	-4.1907***	-4.1807***
Life exp max		0.1725*	-0.0963	-0.1161
Life exp max^2		-0.0133***	-0.0058**	-0.0056**
Gap life exp		-0.1724***	-0.1288**	-0.1342**
Edu max		-0.6019***	-0.5211***	-0.5085***
Gap edu		-0.4676***	-0.3341**	-0.3238**
D_cooking		-1.707***	-1.7336***	-1.6171***
D_cleaning		-2.3359***	-2.2819***	-2.275***
D_electro		-3.5531***	-4.2584***	-4.2655***
D_auto		-1.3813***	-2.0557***	-2.0975***
Nr. of pensioners				
	total	2.4298***		
	healthy		3.8531***	3.853***
	cron and ill		-0.5421	1.253***
	cron not ill		-1.088**	0.4533
	ill not cron		1.6572***	3.3877***
Days in hospital				
	$<$1week			-1.5823**
	1-2 weeks			-1.8813***
	$>$2 weeks			-1.3041**
Medication & Routine check-ups				
	1 member			-2.6162***
	$>$1 member			-4.0876***
No. obs		47317	47317	47317
R^2		0.2027	0.175	0.1698
p value (Sargan overid test)		0.8284	0.5951	0.4885
Anderson-Rubin weak instrument test (p-value)		0.0000	0.0000	0.0000

*** means significant at 1%, ** at 5%, and * at 10%.