Working Paper 135/13

THE PSYCHOLOGY AND ECONOMICS OF REVERSE MORTGAGE ATTITUDES: EVIDENCE FROM THE NETHERLANDS

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The psychology and economics of reverse mortgage attitudes: evidence from the Netherlands*

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November, 2013

Abstract

This paper presents the results from a survey on the attitudes toward reverse mortgages of homeowners aged 45 and over in the Netherlands. We find that there is substantial potential interest in reverse mortgages, especially for the purpose of being able to live more comfortably and not worry about money until death, or to be able to spend a large sum of money upon retirement on hobbies, home improvements or traveling. A similar study has been done for Italy, where results differ from those related to the Netherland. For Italian households a reverse mortgage is primarily seen as a last resort. We use two different frames for suggestions on the use of the loan – own consumption versus bequest - and find that the latter significantly raises interest in reverse mortgages of people with a bequest wish. We interpret this as evidence that people are unaware of the potential of reverse mortgages to optimize the timing of bequests. Women are less interested, while demand is highest among those around retirement age, depends positively on the ratio of housing wealth over income and on the perceived riskiness of future pensions, and negatively on the expected replacement ratio. We find a counterintuitive result for bequest timing, as people are more interested if the age difference with the oldest child is larger.

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* The authors would like to thank the participants of the Netspar/AFM meeting on Innovations in Pension Communication and old age arrangements on March 6, 2013 in Amsterdam, Paul Tang and the other participants of the Netspar meeting on Housing and pensions (Woningmarkt en pensioen) on April 10, 2013 at Tilburg University, the participants at the 11th Workshop on Pensions, Insurance and Savings, University Paris Dauphine on June 6-7, 2013, Paris, Christopher Mayer and the other participants of the NBER conference on personal retirement challenges on November 1, 2013, Boston, Lexmy van den Boogaard and the other participants of the Netspar Pension Day on November 8, 2013, Utrecht, and Gijs Roelofs, Peter Kooreman and Jan Potters for their valuable comments and suggestions.

1. Introduction

From the point of view of optimal consumption smoothing, evidence indicates that older households under-decumulate wealth (Romiti and Rossi, 2012). One reason is that they hold a large part of their wealth in illiquid assets, namely their home. From the point of view of portfolio risk management this large fraction of wealth in housing is not that much of a problem, as home ownership implies prepayment of future housing consumption (Merton, 2007). Moreover, from a behavioral economics perspective housing wealth (paying off mortgage loan) is a commitment mechanism, precisely because it is illiquid hence cannot be consumed (Laibson, 1997). However, the residual value of the house, once future housing consumption has been taken out, could be "too high" especially when remaining life expectancy shrinks. From the perspective of optimal consumption smoothing and bequest timing, liquidating housing wealth may be welfare improving (see Romiti and Rossi 2013). Having too much of illiquid asset may be responsible for household fragility (Brunetti et al. 2012). The mere existence of the possibility of, at least partially, decumulating housing wealth through a reverse mortgage – a mortgage that requires no payments for as long as the borrower lives in the house - would facilitate consumption smoothing over the life cycle without requiring retirees to move to a smaller owned dwelling, or to a rented home. Munnell (2012) argues that a reverse mortgage should be an integral part of life cycle planning.

A reverse mortgage could also be used to cushion shocks in retirement income, and to optimally time bequests (Merton, 2007). With pensions becoming less generous and with pension risk increasingly shifted toward households, there is an increased need for households to make individual life cycle saving and investing decisions. Pension risk is the risk of not having enough income from the retirement date until death (Bodie, 2012), and the financial system should either prevent that risk or offer people the instruments to manage it. And with life expectancy increased, parents are now leaving bequests to their children at a moment in life at which, from an optimal life cycle planning point of view, their children should start decumulating wealth themselves. In this respect, it is important that the financial industry adapts by creating useful products, like reverse mortgages, that help families manage life-cycle risk (Merton and Bodie, 2005).

This paper presents the results from a survey on the attitudes of homeowners aged 45 and over in the Netherlands toward reverse mortgages; the survey is designed using two different frames for suggestions on the utilization of the loan - a consumption smoothing and a bequest one. Results are obtained using individual objective and subjective background

characteristics as explanatory variables. In doing so, we assess whether those who rationally should be more interested indeed are more interested. For example, interest should rationally be higher among those with low income relative to housing wealth and those with a low expected replacement rate.

Our main findings are the following. Only a small minority is familiar with the concept of a reverse mortgage. After having had an explanation of the loan, over a quarter is potentially interested in taking, once retired, a reverse mortgage loan. About 36 percent is neutral, which may imply that the potential interest is even higher. The interest in taking a reverse mortgage loan increases with age until reaching a maximum around 69, and falls afterwards. We interpret this as reflecting the fact that people around retirement age have no other instruments to increase their income (work more, save more, retire later), and have not been prepared to shocks to and changes of the system, including an increase in the age for social security eligibility. Moreover, those recently retired are still at an age at which they may find using a lump sum especially attractive – they have time on their hands, and are still in shape. We find that interest in a reverse mortgage loan depends positively on a cohort based housing wealth over income ratio, which makes sense. The same applies for having more than one mortgage – many elderly have taken a second mortgage on their home as a way to liquidize housing wealth, and they might prefer a reverse mortgage loan instead. We also find that people who expect future pension cuts are more interested, and those who expect to have sufficient savings are less interested. Self-employed are relatively more interested, which makes sense as we know that, not being part of a mandatory employee savings plan, they accumulate less pension wealth (Van Rooij *et al.*, 2007).

Women are less interested, and we find a significant positive effect of the age difference between the parent and the oldest child. Although this is counterintuitive from the point of view of optimal bequest timing, we do not find it surprising. Most people – including economists and finance professionals – are unaware that a reverse mortgage may improve children's utility because it facilitates the timing and certainty of bequests (Merton, 2007).

There is substantial potential interest in a reverse mortgage as an instrument to be able to spend a lump sum upon retirement, or to live more comfortably and not worry about money until death. This constitutes a major difference with the results from a similar study among Italian homeowners (Fornero *et al.*, 2011). In Italy a reverse mortgage is seen as a last resort, hence homeowners have a much less favorable attitude toward this financial product. Italy also offers very few financial products to liquidize housing wealth, and the market for this type of loans is under-developed. This evidence suggests that aversion and little knowledge of the loan market itself could be responsible for the lack of interest in a specific loan such as

the Reverse Mortgage. We also provide several explanations for the country differences in the remainder of the paper.

The paper is structured as follows. The next section provides background information on reverse mortgages. Section 3 describes our data and methodology. In section 4, we present our main findings while Section 5 provides the results of regression analysis of the data. In Section 6 we discuss our findings and draw policy implications. Section 7 summarizes and concludes.

2. Reverse mortgage essentials

A reverse mortgage (RM) is a financial instrument specifically designed for elderly homeowners allowing them to borrow against home equity. Like a forward mortgage it is a loan with the home as collateral, but other than a forward mortgage no payments are required as long as the borrower lives in the home. The mortgage interest is added to the debt. Only when the house is sold because the owner moves to another dwelling or passes away, the bank recovers the loan plus interest.

Essentially, a reverse mortgage loan "strips out" the value of the house that is not needed for housing consumption, as the owner is not going to live indefinitely.[1] (Merton, 2006). This can be represented schematically as follows (Merton, 2011):

$$House = Life\ Annuity\ Housing\ Services + Residual\ House\ Value \qquad (1)$$

The house value is in fact equal to the present value of discounted flow of rents. As life is finite, the housing services derived from homeownership (corresponding to imputed rents) are just a ratio of the housing value, the shorter is life expectancy, the smaller the ratio. Without a reverse mortgage, the homeowner merely benefits from the life annuity housing services, and the heirs receive the residual housing value at the time of death of the owner. With a reverse mortgage, the homeowner gets autonomy over what to do with the residual housing value[2]. He may choose to improve his living standard and/or that of his heirs at any

[1] One reason why people may be averse to the concept of a reverse mortgage is that they find it difficult to imagine that they are not going to live indefinitely. See Kopczuk and Slemrod (2005).

[2] The loan amount should not exceed the expected housing value at death, discounted with the interest rate. The maximum Lump sum at time t (LS) should thus be equivalent to: $LS_t = \frac{p_{(t+1|t)}H_{t+1}}{1+r} + \frac{p_{(t+2|t)}H_{t+2}}{(1+r)^2} + \cdots \frac{p_{(t+D|t)}H_{t+D}}{(1+r)^D}$ where $p_{t+1|t}$ is the survival probability between t+1 and t, H_{t+1} is the house predicted value at t+1. D is the maximum reachable age at death.

moment between now and his death. The value to the heirs is in that case the lump sum(s) they get while their parents are still alive, plus the value of the option to, at the time of death of the parents, sell the house and pay off the debt to the lender (which they will do as long as the house value exceeds the accumulated debt), or to leave the house to the lender (which they will do if the accumulated debt exceeds the value of the house). In other words, the risk of the house having a value below the sum of principal plus interest is for the lender, not the heirs.

Reverse mortgages can be paid out as a lump sum, through fixed monthly payments (term, tenure plan or life annuity), as a line of credit, or as a combination of term/tenure plan and line of credit (Rodda *et al.*, 2000).

A reverse mortgage may be welfare improving and increase efficiency for a number of reasons. If reverse mortgages are regularly available at sufficiently attractive conditions, and hence are part of the set of financial planning instruments, households need to save less during working life, while still being able to maintain their living standard at retirement.[3] Taking account of the availability, in the future, of a reverse mortgage, would thus help homeowners, or those that plan to buy a home, to improve the efficiency of their financial planning over the life cycle. For older households who during working life never planned to take a reverse mortgage loan, it may be a way to maintain their pre-retirement levels of consumption in case their pension income is lower than they expected, for example because of unexpected adverse events in their private life, general financial economic shocks, changes in social security or the health care system, longevity, or simply because they have failed to adequately plan for retirement. In all these cases, a reverse mortgage would help retired households to maintain their standard of living even if their replacement rate is inadequate. And even if households have a replacement rate that is sufficient to maintain their living standard, they may benefit from the possibility of liquidizing (part of) their housing wealth in order to be able to spend a large sum of money on something they find to be welfare improving to themselves: home improvements, an expensive hobby (collecting art) or going on a trip around the world before they will be too old to do so.

Another reason why liquidating housing wealth may improve welfare has to do with the bequest motive. With remaining life expectancy at age 65 increasing and currently being over

[3] The forward mortgage loan on the house should be fully or largely paid off, though.

21 years for women in the Netherlands[4], and with an average age difference of less than 30 years between the mother and the oldest child (see next section), it is obvious that parents leave their children a bequest at a time in life when they should themselves almost start decumulating wealth. Moreover, as Merton (2007) points out, "one does not need to be an expert to know that it is probably far from optimal bequest policy, from the point of view of the heirs' utility, to receive the value of the house as a legacy at some time in the future – perhaps next year, perhaps in 30 years".

It should be noted that the wish to use the loan for own consumption is not by definition in conflict with the interests of the children. Elderly people with children may want to be able to use their housing wealth to provide for their own care, so they can avoid becoming a burden for their children precisely when the children are in the rush hour of life, combining work and care for their children. If they have more liquid assets at their disposal, they can buy help instead of claiming time from their children (Tang, 2013). In the Netherlands, relying on the care of relatives is becoming more important as the government-provided care is being reduced and elderly are increasingly expected to arrange care for themselves.

A reverse mortgage loan is not the only way in which elderly homeowners can liquidate their housing wealth without having to sell the house and buy a less expensive one, or move to a rented home. Alternative financial instruments include selling the house while keeping the right to live in it until death. But reverse mortgages have several advantages over the alternative solutions, both for the homeowner and the buyer of the mortgage. The homeowner cannot be evicted if the accumulated debt exceeds the value of his house. For the lender, the moral hazard risk with respect to maintenance is smaller than that of a forward sale, as the heirs have a stake because they have an option on the residual house value. Moreover, in case the reverse mortgage is taken as an annuity, mortality risk is different from that in case of annuitization of financial wealth. This applies both to the homeowner and the lender. If the homeowner dies sooner than expected, his heirs have the right to the residual housing value – whereas in case of annuitization of financial wealth, they receive nothing. There is a price to this advantage for the heirs: interest rates for this type of product is typically higher.

In the US, the reverse mortgage market has developed over the past decades. In Europe the market is non-existent or very thin, with the exception of the UK. This could be due to suboptimal supply and/or demand. Wicke (2008) estimates that potential demand in Germany is about 1 million households. Based on an expert survey, Lang (2008) concludes

[4] Source: CBS Statline (2011)

that the great obstacle to the acceptance of reverse mortgage products in Germany is a lack of understanding among the public as to their function and the wish to pass property along to heirs without encumbrances or debts. For Italy, Fornero *et al* (2011) find that the lack of interest for the product may be due to the fact that reverse mortgages are not perceived as a financial planning instrument, but rather as a last resort choice in case of emergency.

In the Netherlands, there is currently one type of reverse mortgage loan with a no negative equity guarantee: the ; Florius Verzilver Hypotheek introduced in 2008 by ABN Amro (www.florius.nl/consument/hypotheken/floriusverzilverhypotheek). The loan can be taken up as a lump sum or a fixed monthly or yearly amount. Five years after the contract has been signed, the lender has the right to have the value of the property estimated at the cost of the owner, and to lower the periodical amount based on the current market value. Expectations were high when the product was launched, but it was hardly sold, which may be due to bad timing ex post (financial crisis), the high and stable retirement income of those retired before 2008 as well as their liquid financial wealth. The relative ease with which forward mortgage loans were available up to then and the fact that paying off forward mortgage loans is heavily discouraged by the current fiscal regime (for mortgages that were taken out before 2013) may also have played a role. Other reverse mortgage type contracts do not provide a no-negative-equity guarantee, and owners can be expelled if the value of the loan relative to that of the home exceeds 70%.[5]

Home equity release products, such as reverse mortgages or the sale of the bare ownership (home reversal programs in the UK, *viager* in France) can convert housing equity into cash, by releasing households' needs of liquidity. In the US, the median home value of homeowners aged 50 or more is around 150,000 euro. In Europe, it is around 170,000 euro and in the Netherlands, it is around 250.000 euro (Christelis *et al.*, 2013). When housing constitutes a substantial value, it could represent an easy channel through which to provide an additional income flow for retirees.

Over the past decades, views on the potential demand for reverse mortgage loans have changed. Some examples to illustrate this are the following. Venti and Wise (1987) maintain that most income poor elderly also have a relatively small amount of housing wealth, therefore a reverse mortgage would mean only a small percentage increase in income, even at low income levels. For this reason, they believe that the potential market is limited to very old, single persons. Evidently, they did see a reverse mortgage as last resort for the poor, and

[5] For example, the RABO product requires the borrower to immediately pay off the loan as soon as the principal plus accumulated interest exceeds 75% of the liquidation value of the house.

they ignored the potential benefit from a reverse mortgage for those with a bequest motive. Moreover, the paper does not reflect the current wealth of the US population.

Case and Schnare (1994) claim that all 'house-rich, cash-poor' elderly households should be more interested in such products, and, since many households fall in this category, the market for reverse mortgages should be very large. Mayer and Simons (1993) also claim that the potential market for reverse mortgages is quite large, as many elderly could use it to pay off pre-existing debts. Clearly these authors see a reverse mortgage more as a safety valve than as a financial and estate planning solution, in line with popular wisdom but not finance theory. Poterba *et al.* (2011), state that the decision to annuitize wealth is more relevant for households in the upper percentiles of the wealth distribution. They confirm that most households treat housing wealth as precautionary savings and hence decumulate only in case of exogenous shocks, such as the death of a spouse. Munnell et al. (2012) consider a reverse mortgage as a tool "as powerful as asset allocation in attaining retirement security." The fact that households who use reverse mortgages tend to be low-income, low-wealth and in poor-health (see Nakajima and Telyukova, 2011, for the USA) suggests that it is regarded as a last resort and that homeowners are unaware of the financial planning and welfare improvement potential of the instrument.

Many psychological factors other than the perception of risk and uncertainty are likely to affect the potential demand for reverse mortgages, both in terms of volumes and in terms of type (i.e. tenure, lump sum, line of credit or mixed). For instance, when eliciting respondents' interest in annuities, Beshears *et al.* (2013) find that adding the sentence 'Choosing a bigger lump sum gives you more control over your investments and more flexibility over the timing of your spending', significantly reduced the probability to annuitize one's wealth. They also find that people prefer partial annuitization to an all-or-nothing offer, which means that a more flexible product design could be more appreciated. Another interesting finding concerns the fears of counterparty risk when choosing to annuitize, i.e. respondents were scared that the institution supplying the annuity would not make the payments.

Limitations on the supply side can be explained by risk factors faced by the credit institutions, primarily related to the dynamics of interest rates and house prices, as well as by the potential adverse selection in case of extremely long lived mortgagors, and moral hazard in case of meager house maintenance by homeowners intending to default on their contract obligations. Research into annuity pricing shows that cohort risks are considerable and may provide an explanation of the low money's worth of annuities. In order to compensate for all such risks, lenders charge hefty insurance fees, which together with high commissions and

compound interests make reverse mortgages rather costly. Davidoff and Welke (2005) investigate adverse selection by comparing the mobility rates between reverse mortgage borrowers and non-borrowers. Interestingly, they unearth advantageous selection, as the homeowners who take out the loan are also more likely to sell their home and therefore repay it earlier.

Mitchell & Piggot (2003) highlight the potential for reverse mortgages not only to boost consumption among the elderly, but also to reduce public pension liability, and mitigate the demand for long term care facilities. In this case, the government would play a substantial role in improving the efficiency of capital markets and providing safeguards for both borrowers and lenders, in order to support the development of a market for reverse mortgages. Ong (2008) highlights the unfavorable tax regimes as one of the reasons behind the scarce development of reverse mortgage market in the UK. Another important issue is whether or not countries introducing home equity release products also provide a strict regulation in case of negative equity (the no-negative equity guarantee), and how this regulation is explained to the potential borrowers. For example, Reed (2009) documents concern among Australian borrowers regarding the possibility of being evicted in case of negative equity.

3. Data

Our data have been collected through an internet survey in December 2012 among the participants of the CentERpanel run by CentERdata at Tilburg University. CentERdata is a survey research institute that is specialized in data collection and internet surveys. The CentERpanel consists of about 2000 households representative of the Dutch-speaking population in the Netherlands. The questionnaires are answered at home using an internet connection. Data collected with internet surveys display higher validity and less social desirability response bias than those collected via telephone interviewing (Chiang and Krosnick, 2003).[6] Panel members fill out short questionnaires via the internet on a weekly basis. Annually, they provide information on individual income, household wealth, health, employment, pensions, savings attitudes, and savings behavior for the DNB Household Survey (DHS), providing researchers with a rich set of background information on the

[6] CentERdata forms part of the CentER Group at Tilburg University. See also http://www.uvt.nl/centerdata/en. Households who do not have access to a pc are provided with a set-top-box for their television. In case of attrition of panel members, CentERdata selects new members to keep the panel representative for the Dutch population. High income members are somewhat overrepresented. We have verified that this does not affect the descriptive statistics qualitatively.

respondents. The panel has been used in many studies of financial behavior and attitudes (see for instance Van Rooij *et al.*, 2007) and financial literacy and retirement planning in the Netherlands (see Alessie *et al.*, 2007), and the effects of pension information on behavior (Prast *et a*l., 2012). For a complete description of the CentERpanel and the DHS, see Teppa and Vis (2012).

The main focus of the questionnaire devised for this paper was to assess whether homeowners aged 45 and over would be interested in a reverse mortgage loan at retirement. For the specific purpose of our paper we designed a new module, run in December 2012 (week 49), specifically designed to investigate the potential for reverse mortgages. The questionnaire was administered to a subset of respondents to the Center dataset. Selected households are homeowners aged 45 and over, totaling 1401 households, of which 1145 fully completed the questionnaire (response percentage 81.7%).

Table 1 shows some descriptive statistics of our sample. From Table 1 several things stand out. First, the difference between male and female respondents, with nearly 60% men, whereas the Centerpanel gender composition is fifty/fifty. Second, over 80 percent lives together with a partner and about a quarter of the respondents has one or more children living at home.

Table 1. Descriptive statistics

N of respondents	1,145
Women	*479 (41.8%)*
Men	*666 (58.2%)*
Age	Min=45, max=90, mean/median=62
Education	
Low	*32.2%*
Medium	*26.2%*
High	*41.6%*
N of respondents with (grand)children	82.9%
Age difference with oldest child	
Women	*27.1 year, min=17, max=39 (n=391)*
Men	*29.5 year, min=18, max=46 (n=556)*
Household composition	
Single, no children at home	*14.8%*
Couple, no children at home	*57.6%*
Couple, with child(ren) at home	*23.5%*
Single, with child(ren) at home	*1.8%*
Other	*2.5%*
Lower Class	16.3%
self-employed	4.8%
Net household income (euro/month)	mean = 3,020, median = 2,834

Source: authors based on Centerdata

To get a better idea of the sample's financial status by age, Tables 2 and 3 give information on income and net and gross housing wealth of the different age groups in the sample.

Table 2. Household size, income and financial wealth by age group

		# HH members	Net HH income (month)		Total Financial Wealth	
age group	Freq.	*mean*	*mean*	*median*	*mean*	*median*
45-54yrs	307	3.3	3,104	3,000	23,314	6,315
55-64yrs	379	2.3	3,126	2,936	43,190	11,700
65-74yrs	321	1.9	2,931	2,700	50,944	15,856
75-90yrs	138	1.7	2,753	2,750	67,330	26,893
Total	*1145*	*2.4*	*3,020*	*2,834*	*43,101*	*12,472*

SoSource: authors, based on DHS data

Table 2 shows the income and wealth characteristics of different age groups. As one expects, income tends to decline after retirement, reflecting i) a less than 100% replacement ratio, and ii) the fact that the eldest retirees have benefited less from the increase in economic growth and wages starting around 1970, and hence accumulated less pension capital than the younger cohorts. But Table 2 also shows that elderly retirees have a large amount of financial wealth (current and saving accounts, stocks and bonds). At first sight, this seems to run counter to the life cycle theory of savings, which would predict much more decumulation to take place, particularly for those assets easy to liquidate (see Borella and Rossi, 2013 and Romiti and Rossi, 2012). The relatively high financial wealth of older groups can be partly explained by a natural form of selection that could be described as the 'survival of the richest': richer people live longer[7], and are probably also able to live longer independently on their own, because of a relatively better health condition and the possibility to hire personnel for services in and around the house. However, why don't the elderly decumulate their wealth? One of the reasons could be that financial wealth represents only a small part of total wealth, compared to housing, however, even households with balanced portfolios may not be depleting it because of precautionary motive: they may know that statistically they are holding too much financial wealth given life expectancy, but at the same time they may not want to run the risk of being short of cash because they live longer than expected. However, this risk of living too long could be neutralized by buying an annuity. The thinness of the annuity markets contradicts again the life cycle prediction (Yaari, 1975; Davidoff et al. 2005).

[7] Higher social classes tend to live longer and are thus overrepresented in the oldest cohorts. In the Netherlands the difference in life expectancy for men amounts to 7 years for the highest versus the lowest educational level (source: CBS Statline (2012)).

Given the importance of housing in total assets of the elderly, the possibility of a reverse mortgage would make this precautionary savings motive less important and perhaps lead to more decumulation of financial assets, and the housing value may be used in case of higher than expected longevity.

Another theoretical explanation for this finding would be that the extra financial wealth is partly due to retirees having moved to a less expensive home, with the purpose of increasing liquidity of their wealth. The data however do not support this, as both the average time people have been living in their current house and the mean and median book value of the house (WOZ) steadily increase with age. Note that, by definition, our sample does not include those retirees that have liquidated their housing wealth by selling their home and moving to a rented house.

When interpreting Table 2 it is also important to keep in mind that the average number of household members drops with age, first because the children move out, and next because at higher ages more people become widowed. Indeed, the percentage of single households rises from 10 percent among those between 45 and 55, to over 46 percent among those over 85 years of age. This too helps explain a dropping average net household income.

Table 3. Housing characteristics of sample, by age group

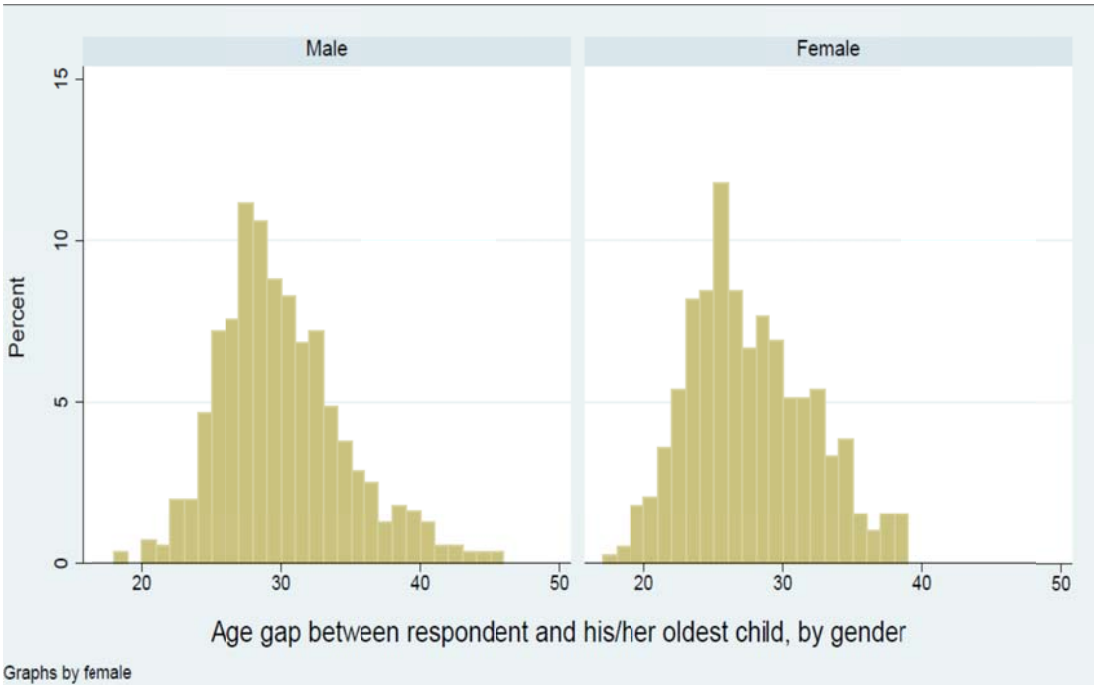
		Housing Wealth		Book value (*WOZ*)		Mortgagefree
age group	Freq.	*mean*	*median*	*mean*	*median*	*percentage*
45-54yrs	212	173,000	171,000	251,000	234,000	0.30
55-64yrs	291	206,000	192,000	282,000	250,000	0.34
65-74yrs	258	283,000	215,000	303,000	280,000	0.44
75-90yrs	114	279,000	250,000	333,000	295,000	0.50
Total	*875*	*230,000*	*200,000*	*287,000*	*255,000*	*0.38*

Source: authors, based on DHS data
NB: As these housing variables are originating from other DHS questionnaires and not everyone was able or willing to answer these questions, the total number of observations here is below 1145.

Table 3 clearly shows that both mean and median net housing wealth are higher for older cohorts. This is partly the result of paying off housing debt and of the rise in housing prices over the past 30 years. Second, Table 3 shows that among those 65 and over (hence, retirees) a large fraction of homeowners still has a (forward) mortgage. Likely explanations are a) the generous tax treatments of mortgage interest payments, b) the generous loan conditions (no repayment of principal needed) of (second) mortgage loans offered until recently, and c) retirees avoiding paying off their mortgage loan in order to not accumulate more illiquid financial wealth.

As a reverse mortgage may serve as a bequest planning instrument, we have used the DHS data to calculate the age difference between each parent and the oldest child in the household. Out of the 1145 respondents in our sample 947 report to have children. On average, the age difference is 29 years, the minimum is 17 and the maximum 46. More detailed information is given in Figure 4, which differentiates between mothers and fathers. In general, the age difference between the mother and the child is more relevant, because women tend to live longer than men (in the Netherlands, the difference is 3,6 years for those born in 2011 [8]). The smaller the parent/child age difference, the older the heir will be when he receives a bequest.

Figure 4. Age difference between parent and oldest child, father and mother separately



4. A first look at the results

In this section we present the aggregate results of our questionnaire.

[8] Source: CBS Statline (2012)

We started the questionnaire with the following explanation of the concept of a reverse mortgage:

"Reverse mortgages are popular in a number of countries. A reverse mortgage is a loan that you may obtain from your bank if your current mortgage debt amounts to less than half of the value of your house. The target group consists of retirees. A reverse mortgage does not result in higher monthly living expenses, because the mortgage interest is added to the debt. Only when the house is sold because the owner moves to another dwelling or passes away, the bank recovers the loan plus interest. The loan can be taken out as a lump sum, or as a supplement to the monthly retirement income, or as a freely disposable credit line that one may use at will",

Because reverse mortgages are quite unknown in the Netherlands, it was necessary not only to explain the concept to respondents, but also to give examples of its potential use. We used two different sets of examples of how to use the reverse mortgage loan: half of the respondents were given bequest suggestions, while the others were given suggestions regarding their own financial wellbeing..

We first asked whether the respondent had heard of such a type of product (9.1 percent said they had); our second question was the crucial one, asking respondents whether they would be interested in a reverse mortgage:

Most respondents, roughly 36%, claim to be indifferent, while a good 21% finds it quite appealing, and roughly 6% finds it very appealing. The remaining 37% of respondents finds it not (15 %) or not at all (roughly 22 %) appealing (see Figure 5).

Figure 5. Appeal of reverse mortgage to homeowners age 45 and over

Source: authors' calculation based on survey data

Consumption smoothing vs bequest timing

A reverse mortgage may be welfare improving if homeowners derive utility for their children's wellbeing because it would enable them to optimally time bequests. With current demographics, parents leave a bequest when their children have reached an age at which they should start decumulating wealth – hence much too late. A reverse mortgage market would help parents with insufficient liquid savings but considerable housing wealth to help children to buy a home through the facilitation of a down payment -even though they reduce the savings rate by children (Mayer and Engelhardt, 1994).

In our sample the difference with the oldest child is 29.6 for the father and 27.1 for the mother (Figure 4). With an average life expectancy for women of around 86 for women in their sixties[9], it is clear that the first child of the women in our sample would receive an inheritance when approaching the age of 59. The optimal timing of a bequest is not a priori clear, though. When someone can count on a bequest, be it late in life, then s/he can choose to accumulate less during working age, thus already optimally timing the bequest. But large uncertainty about amount and moment of the bequest would still prevent a successful implementation of such a strategy. Yet, if a bequest would be particularly valuable for the recipient at age 30, when the parents are in their sixties, then a reverse mortgage will probably not be the most efficient instrument for the capital transfer between generations.

[9] Source: CBS Statline (2012)

In the introductory text to the questionnaire, examples were given of the possible use of the reverse mortgage loan. Randomly, half of the respondents were given a consumption smoothing frame:

Framing A:

Retirees can use a reverse mortgage for instance to supplement their pension so that they can live more comfortably and can afford (more) assistance in housekeeping, or for one-off luxury expenditures such as a trip around the world, a new car or trailer.

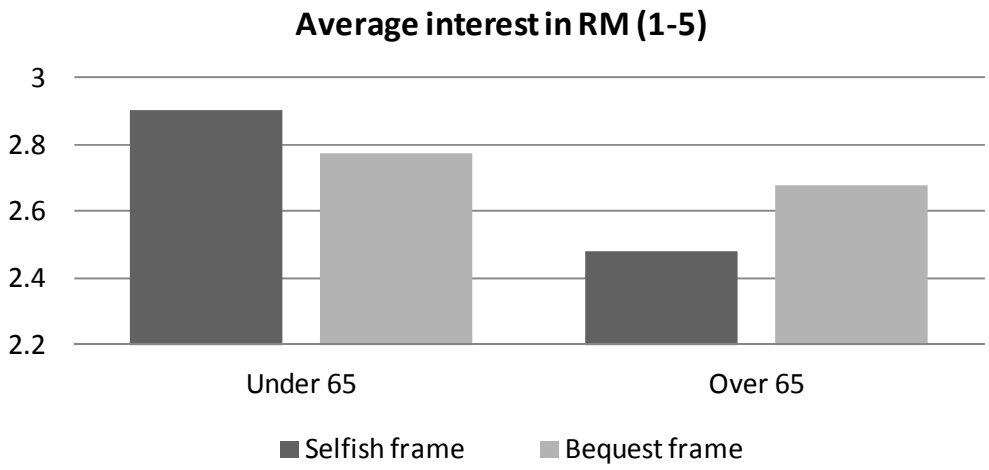
Whereas the other half was provided with 'utility-of-heirs" suggestions:

Framing B:

Retirees can use a reverse mortgage for instance as a means of gifting money to their children or grandchildren, so that they can go to college or university, can buy their own home, or can start up a business venture. It enables them to financially support their children or grandchildren just when they most need this support.

We find no framing effect on the attitude towards taking a mortgage in the whole population. On average, interest under both frames is almost identical. But a break-down of the data in over 65 and under 65 years of age shows a significant difference. Respondents under 65 are relatively more interested under the "selfish" frame, which suggests possibilities for the homeowner to use the loan for own consumption. On the other hand, respondents over 65 are relatively more interested under the "bequest" frame (see Figure 6). A simple, single-sided t-test would classify the effect under 65 at a significance of 0.065 and the effect over 65 at a significance of 0.044. The driving effect seems to be that older respondents have a stronger bequest wish.

Figure 6. Interest in reverse mortgage by frame, retirees and non-retirees



Source: authors based on survey data

For the whole population we find a significant framing effect (consumption vs heir utility) on what respondents say they would use the reverse mortgage loan for: in the consumption frame condition, respondents award a higher score to the cash on hand purpose of a reverse mortgage, while in the bequest frame condition respondents gave a higher score to the bequest motive. These findings suggest that a) both types of use are appealing, and b) there is a lack of awareness among homeowners as to the possibilities for the use of reverse mortgage loans. It also suggests room for improvement in the understanding of the product and its use, especially among people who do not need the money to supplement their retirement income. We further analyze the framing effects in the next section.

Why interested?

We asked respondents to indicate for what purpose they would use the money made available to them through a reverse mortgage (see table 4). Those who have a (moderately) positive attitude toward a mortgage loan state as their most important reasons the desire to live comfortably, to make a significant expenditure, or the possibility to have a last resort in case they could not make ends meet with their pension income (second layer) and old age pension benefit (first layer). Though this ranking of purposes in itself was not affected by the frames we have used, there is a substantial and strongly significant rise in the amount attributed to already gifting part of the inheritance to the surviving relatives for those who were shown the bequest frame.

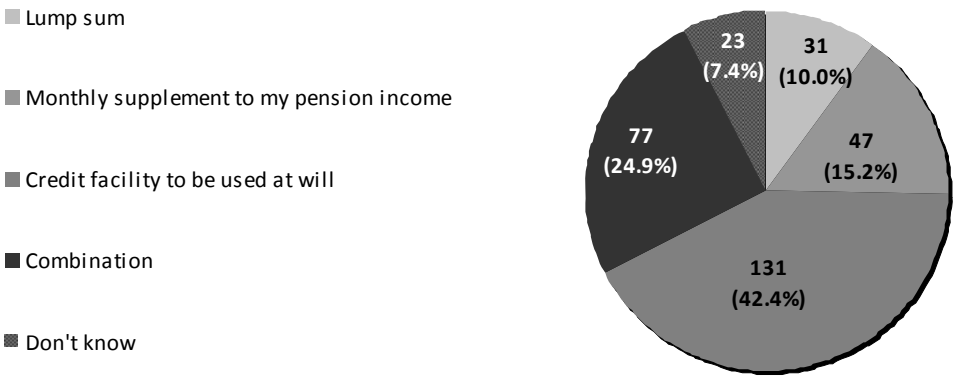
Table 4. For what purposes would you use the money made available to you through a reverse mortgage? – By frame

You can distribute 100 points across the following options* You can also choose to assign 100 points to just one option, and zero points to all the others		
Frame	***Own consumption***	***Bequest***
To live more comfortably and not worry about the money	31.2	27.7
To already gift part of my inheritance to my surviving relatives	11.3	19.4
To already donate part of my inheritance to charity	2.6	1.9
To make a significant expenditure	27.5	24.6
To buy a holiday home	3.2	2.1
As a last resort	21.6	22.3
Other	2.6	2.0
N	163	146

*****respondents with a positive attitude toward a reverse mortgage loan, 27% of sample (n=309)
Source: authors' calculation based on survey data

We also asked respondents with a favorable attitude towards reverse mortgages which loan arrangement they would prefer. Over 40 percent chose the line of credit, as shown in figure 7.[10]

Figure 7. What loan arrangement would you prefer?*



**respondents with a positive attitude toward a reverse mortgage loan, 27% of sample (n=309)*
Source: authors' calculation based on survey data

[10] There was no significant effect of the frames in this question.

Why not interested?

Respondents who claimed to find a reverse mortgage loan not or not at all appealing (37% of sample) were asked to rate the importance of a few reasons for it. The suggested reasons (see Appendix) had to do with feelings ("too dependent on the bank", "it doesn't feel good", "I would worry about being evicted from my home", "I want to have as little debt as possible"), income expectations ("I will have ample income by that time"), and the use of the home ("my children or grandchildren will take up residence in my house").

Strictly speaking, with the type of reverse mortgage we envisage, there is no risk of being evicted. Neither is there any dependence of the bank, because if the bank should e.g. refuse to pay out the contracted amount, or go bankrupt, the homeowner does not lose anything – other than the possibility of borrowing against the housing value. Moreover, the "I want to have as little debt as possible" does rationally not make sense, because as long as the housing value exceeds the accumulated debt, the borrower is a net creditor. However, it was our guess that these might be some of the worries of the not-interested homeowners, which indeed turned out to be the case. It might be that we have influenced our respondents by offering these suggested reasons, and perhaps we should have randomized in order to discover a potential biasing effect. However, this holds NOT for the lack of interest in a reverse mortgage, but merely for the reasons WHY they are not interested.

Be that as it may, the main stated reasons for not being interested are that respondents i) do not want to have debts, and ii) do not want to depend too much on banks. The fear of debt could be interpreted in a behavioral economics sense. Once homeowners allow themselves to liquidize (and spend) some of their housing wealth, they may fear that they are unable to control spending, with the risk of running out of assets and leaving no bequest at all. Holding some of their wealth in an illiquid form may serve as a disciplining (self-control) device. This would be similar to the behavioral explanation of the dividend puzzle in finance, (Statman, 1999; Prast, 2000).

Having presented in this section the main aggregate findings and mean results, in the next section we take a closer look at the background variables explaining attitudes towards a reverse mortgage loan as well as the way such loans would be used

5. A closer look at the results

In this section we present the result of the regression analysis of respondents' attitudes toward the concept of a reverse mortgage. We start by describing how we construct the variables based on the questionnaire results.

Dependent variables

As the main dependent variable we use the interest in a reverse mortgage loan. The respondents' attitude was measured qualitatively, asking whether they are interested. We translate this into an ordinal scale represented by a discrete variable ranging from 1 for the respondents who find them least appealing to 5 for those who find them most appealing.

Explanatory variables

In analyzing the attitude of homeowners to reverse mortgage loans, we want to assess a) whether and to what extent the explanatories, which should rationally – given the benefits of reverse mortgage loans outlined in Section 2 – have an impact on the interest into the RM, do indeed have a significant effect, b) whether there are other differences according to background characteristics and if so, we provide some possible explanations.

From an optimal financial planning perspective we would therefore, if we assume rationality, expect reverse mortgage interest to depend positively on net housing wealth, net housing wealth over (expected) pension income and over liquid financial wealth. When it comes to cushioning pension income shocks we would expect interest to depend positively on perceived pension income risk, and when it comes to lending of last resort we would expect it to depend positively on any perceived risks as well as adequacy of savings. As to heirs' utility, the smaller the difference between the age of the parents and that of their children, the larger the potential welfare improvement of better bequest timing, while the "alleviation" motive is more likely to play a role in case the age difference is larger – children in their thirties and forties have little time at hand to care for their parents because of the time and effort they need to devote to their own careers and care for their children.

As the housing wealth/income ratio at retirement is the relevant ratio, building quintiles over the whole sample could be misleading. A household member aged 45 may within its age category have the highest housing wealth/income ratio, but still end up in the lowest quintile of the whole sample because older households have more housing wealth and lower income. Therefore, we have first calculated individual HW/Income ratios. Next, we have constructed quintiles within five year cohorts.

Last resort

To the degree that reverse mortgages are seen as a last resort, we would expect that the attitude depends negatively on expected adequacy of retirement saving and financial wealth

relative to income. From the point of view of integrated financial planning, we would expect that the interest in a reverse mortgage depends positively on expected pension cuts, net housing wealth, and net housing wealth over financial wealth and over income (both at retirement), and on life expectancy.

Bequest wishes and framing effects

The 0/1 variables are dummy variables. The reverse mortgage interest and the health status questions use a 5-point scale (with 5 standing for 'very interested', 'poor health' and 'health much worse than one year ago', respectively). The chance of leaving an inheritance of over half a million euro was asked in percentages (0-100%). The respondents were also asked to rate nine statements on a 10-point scale, with 1 meaning "does certainly not apply to me" and 10 meaning "certainly does apply to me". As some of the variables are originating from other DHS questionnaires there is a small loss of observations for those questions.

Section 2 identified various reasons why reverse mortgages may be welfare improving: as instrument in life cycle planning, as cushion against adverse shocks in e.g. retirement income or social security and health care arrangements, as "medicine" against under-saving and as a way to optimally plan and time bequests. Obviously, for the older respondents in our sample who did not anticipate the possible introduction of some sort of a reverse mortgage later in life, such a mortgage as part of a new life cycle saving and investing strategy is not possible. This applies for both those who are retired and for those who are close to retirement. For these households the other motives may all be relevant. Rationally, one would expect the interest in a reverse mortgage to depend on the expected replacement rate (-) and the ratio of housing wealth relative to income (+). As for financial wealth, the likely effect is not a priori clear. On the one hand, one might argue that more financial wealth reduces the need for liquidating housing wealth. On the other, a larger amount of financial wealth may be a buffer stock against the risk of longevity, which may be alleviated by the mere existence of a reverse mortgage possibility. It should be kept in mind that lower incomes need a higher replacement rate than do higher incomes (Munnell et al., 2012), but among homeowners low incomes are likely to be underrepresented. In the Netherlands it is traditionally assumed that a gross replacement rate of 0.7 (first, second and third layer combined) - which would on average mean a net replacement rate between 0.8 and 0.9 - is sufficient to maintain the preretirement living standard, given mortgages being paid off and increased time available for home production. As to the household members' health, several factors should rationally play a role. On the one hand, good health allows retirees to invest in hobbies or their home or go on a trip around the world (+). It also implies longevity risk, for which a reverse mortgage may

provide some insurance in case it is taken as an annuity. On the other hand, good health enables retirees to substitute household production for labor income (-), (Aguiar and Hurst, 2008) and may imply lower household expenditures on care and cure (-). However, household production is possible only during the "golden years" (65-75, Skinner, 2007) .For the purpose of an ordered probit regression analysis we assume that the discrete values of the dependent variable are based on an underlying continuous and latent variable y* and that this latent variable is a linear function of all the explanatory variables:

$$y_i^* = \boldsymbol{\beta}'x + \varepsilon \quad for\ I = 1, 2, ..., N$$

where β is a vector of parameters to be estimated, x is a vector of covariates, N is the number of respondents, and ε is the error term, which we assume to be normally distributed.

The vector of covariates x includes the following: a second order polynomial in age, the log of net household income, and several dummy variables to control for heterogeneity: gender, offspring, medium or high education, and a dummy for the self-employed. The potential income-wealth mismatch is represented by the HW/I quintiles described in the previous section (Q-ratio). As a proxy for expected financial wealth, we use the statement "I expect to have enough savings when I retire" rated on a scale from 1 to 10; for negative retirement expectations we use the statement "I expect to need to deal with disappointing pension income". A framing effect is taken into account through an interaction between the wish to leave a bequest and the framing of the reverse mortgage question in terms of bequest. We also have an indicator for the probability to leave a large inheritance of 500.000 euro or more. Finally, we control for the presence of other mortgages. Many homeowners aged 60 and over in the Netherlands have taken a second mortgage on their home, which may be seen as a way to liquidize their housing wealth in a situation where acceptable supply of reverse mortgage loans is not available (CBS, 2013). We would therefore expect a positive relationship. As for the presence of a second home, it might go either way. On the one hand, selling the second home is a way to liquidize housing wealth and hence should have a negative impact on interest in reverse mortgage loans. On the other hand, if people would like to keep their second home, a reverse mortgage might enable them to do so. Yet, having a second home might indicate less liquidity constrains to start with, so there would also be less necessity to tab into the available illiquid wealth. Table 5 shows the regression results.

Table 5. Interest in RM; Ordered probit regression results

	Marginal Effects on Probabilities					
	coeff_all b/se	No b/se	Not_really b/se	Neutral b/se	Somewhat b/se	Very b/se
Interest In RM						
Age	0.109**	-0.030**	-0.011**	0.007**	0.024**	0.010**
	(0.05)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
Age squared	-0.001**	0.000**	0.000**	-0.000*	-0.000**	-0.000**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Female	-0.249***	0.070***	0.025***	-0.018**	-0.055***	-0.022***
	(0.08)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)
Age diff with oldest child	0.035***	-0.010***	-0.004***	0.002**	0.008***	0.003***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Agediff*bequest wish	-0.003**	0.001**	0.000**	-0.000*	-0.001**	-0.000**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Offspring	-0.976***	0.195***	0.111***	0.045	-0.200***	-0.150**
	(0.31)	(0.04)	(0.03)	(0.04)	(0.05)	(0.07)
log(net income)	0.225*	-0.061*	-0.023*	0.014*	0.050*	0.021*
	(0.12)	(0.03)	(0.01)	(0.01)	(0.03)	(0.01)
Total wealth (in 100,000)	0.002	0.004	0.002	-0.001	-0.004	-0.001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Medium education	0.067	-0.018	-0.007	0.004	0.015	0.006
	(0.12)	(0.03)	(0.01)	(0.01)	(0.02)	(0.01)
Higher education	0.064	-0.017	-0.007	0.004	0.014	0.006
	(0.12)	(0.03)	(0.01)	(0.01)	(0.02)	(0.01)
Q-ratio	0.059*	-0.016*	-0.006*	0.004	0.013*	0.005*
	(0.03)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
Sufficient savings	-0.053*	0.015*	0.006*	-0.003*	-0.012*	-0.005*
	(0.03)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
Expects pension cuts	0.049**	-0.013***	-0.005***	0.003**	0.011***	0.005***
	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Bigspend	0.069***	-0.019***	-0.007***	0.004***	0.015***	0.006***
	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Grow old in current home	0.024	-0.007	-0.003	0.001	0.005	0.002
	(0.02)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Move smaller	0.062***	-0.017***	-0.006***	0.004**	0.014***	0.006***
	(0.02)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Move rented	0.015	-0.004	-0.002	0.001	0.003	0.001
	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Trusts in banks	-0.009	0.003	0.001	-0.001	-0.002	-0.001
	(0.02)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Sufficient income	-0.021	0.006	0.002	-0.001	-0.005	-0.002
	(0.03)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
self-employed	0.378*	-0.087**	-0.044*	0.000	0.085**	0.046
	(0.20)	(0.04)	(0.02)	(0.01)	(0.04)	(0.03)
self-assessed health	-0.012	0.003	0.001	-0.001	-0.003	-0.001
	(0.06)	(0.02)	(0.01)	(0.00)	(0.01)	(0.01)
self-assessed health change	-0.136**	0.037**	0.014**	-0.008*	-0.030**	-0.012**
	(0.06)	(0.02)	(0.01)	(0.00)	(0.01)	(0.01)
Lower Class	-0.350***	0.104***	0.031***	-0.035**	-0.074***	-0.026***
	(0.13)	(0.04)	(0.01)	(0.02)	(0.03)	(0.01)
Inheritance>500 K	-0.006***	0.002***	0.001***	-0.000**	-0.001***	-0.001***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Bequest frame	-0.358*	0.097*	0.037*	-0.022*	-0.079*	-0.033*
	(0.19)	(0.05)	(0.02)	(0.01)	(0.04)	(0.02)
Bequest wish	0.050	-0.014	-0.005	0.003	0.011	0.005
	(0.04)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
Bequest frame * beq wish	0.069**	-0.019**	-0.007**	0.004**	0.015**	0.006**
	(0.03)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
# of Mortgages	0.201***	-0.055***	-0.021***	0.012***	0.045***	0.018***
	(0.05)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
Second home	-0.390**	0.121*	0.031***	-0.045	-0.080**	-0.026***
	(0.20)	(0.06)	(0.01)	(0.03)	(0.03)	(0.01)
N	796	796	796	796	796	796
P	0.000	0.000	0.000	0.000	0.000	0.000

Significance *** p<0.01, ** p<0.05, * p<0.1. Standard errors reported in parentheses are robust to heteroskedasticity;

Objective background variables

Table 5 shows that the interest in reverse mortgage loans depends significantly on the following *objective* background variables: age and age squared – such that interest peaks at age 69 – gender (female -), offspring (-), the age difference with the oldest child (+), net household income (+), Q-ratio (+), self-employed (+), the number of mortgages (+), the possession of a second home (-), and social class (lower classes are less interested). Women are less interested into the RM product, the probability of being somewhat interested or very interested in RM being lower than that of men by 5 and 2 percentage points, respectively.

Most explanatory variables have the predicted sign. This is not the case with gender, with women being significantly less interested, even though they may benefit most – there is a huge gender gap in the Netherlands when it comes to pensions (OECD, June 2013). Possible explanations are that women tend to be less confident when it comes to financial decision-making, and that women may be more biased into thinking that the bequest should not be consumed or handed out before death. It may also be in line with a wish for self-control and a fear that once you start dipping into capital, you may consume all.

The variable with the highest impact is having offspring, with a negative sign, suggesting that a reverse mortgage is seen by households with offspring as detrimental to bequest accumulation. Having offspring reduces the probability of being somewhat interested or very interested by 35 percentage points. This variable is by far what matters most in the reverse mortgage attitude. Bequest motives plays a big role, but why households think it is better to leave bequest at an uncertain moment rather than controlling the timing of bequest by subscribing to a reverse mortgage is, from a point of view of optimal financial planning, a puzzle (Merton, 2007). Counterintuitive is also the positive significance of the age difference with the oldest child, as from the point of view of bequest timing one would expect a minus sign– the smaller the age difference, the older the child when the bequest comes his way. This may imply that bequest timing is not the main reason for being interested. Finally, the self-employed dummy is positively significant. As self-employed tend to save less for old age (they reveal significantly less optimism about their income and savings levels at retirement then the other respondents in our sample) and be homeowners more often, reverse mortgages could certainly be a helpful tool for them. The relatively low interest in reverse mortgages by people from lower socioeconomic classes might be the result of less interest in seemingly complex financial instruments in general. Trust in banks does not seem to be the reason, as lower classes show to have a stronger trust in banks than higher classes in our sample.

As in the US, in the Netherlands the combination of rising home prices, falling interest rates and ample refinancing opportunities made it possible – up to 2008 - and attractive for

households to take a second (forward) mortgage on their home (Khandani *et al.*, 2009). Our regression shows that having a second mortgage increases the probability of being interested in a reverse mortgage. possible explanation is that households have taken a second mortgage as a way of liquidating housing wealth. For that purpose, a reverse mortgage would be superior as it does not involve payments. An alternative explanation is that those with a second mortgage are more keen or and/or have more knowledge of using a mortgage loan as planning instrument.

Subjective background characteristics

The table also reveals significant *subjective* background variables. These include the expectation to have sufficient savings (-), the expectation that there will be future pension cuts (+), self-assessed worsening of health (-), the expectation to leave a large bequest (-), the plan to move to a smaller home (+), and the plan for a big expenditure upon retirement (+). It is worth noting that the role of information about pension income magnitude does play a role. Indeed, expecting pension cuts increases the probability of being interested in the product significantly. The bequest frame has a significant negative effect, but in combination with a bequest wish there is a significantly positive interaction effect, such that the total effect of the bequest frame is positive for those who have a relatively strong bequest wish.

6. Discussion and policy implications

More than a quarter of Dutch homeowners aged 45 and over are interested or moderately interested in the possibility of a reverse mortgage loan, while 36% is neutral. Given that 91 percent had never heard of the concept before, the interest is considerable. On the other hand, intentions do not always translate into action. The interest is bigger among those that are not retired yet. This is relevant, because the possibility of a reverse mortgage upon retirement might make them change behavior in the sense of paying off their forward mortgage more quickly. The reverse mortgage would be primarily used for own spending, that is consumption smoothing of homeowners, not for optimal bequest timing.

A similar study for Italy finds that reverse mortgages are not perceived as a financial planning instrument, but as last resort in case of emergency (Fornero et al. 2011); furthermore, the majority of Italian households reply that they are not interested in the product even though they do not really know its features. The Dutch case is more promising,

since over a third is neutral towards the concept of a reverse mortgage, which leaves less than 40 percent who find the product not appealing.

Challenges to retirement planning are similar in these two countries, with pensions becoming less generous and more risky, and with the retirement age increasing. However, housing wealth and homeownership differ, as well as the culture regarding housing. In the Netherlands, (forward) mortgages are high because of the generous fiscal treatment, while in Italy homeowners tend to have little or no housing debt. In the Netherlands, only a small fraction of homes remains in the family, while in Italy more families live in homes (and on land) that they inherited from their parents. In the Netherlands, children tend to move to their own home (rented or bought) at a much younger age than children do in Italy, where many continue to live with their parents for a long time.

What conditions should be met for reverse mortgages to become a standard instrument in life cycle planning?

Practical implications of our findings are that with pension risk shifted to employees and with pensions becoming less generous, supply of competitively priced reverse mortgage loans could improve welfare through more possibilities for optimally smoothing consumption. The mere existence of this instrument could reduce the need to hold precautionary savings and hence improve consumption smoothing. Currently, there are no tax barriers to using the product for handing out bequests “with the warm hand” – rather, the opposite is true. Rules and regulations concerning reverse mortgages should be in place, though, to prevent misselling and people entering into a contract which may at some point force them to be evicted by the lender.

The analysis presented in this paper suggests that a latent demand could be “kissed awake”, for example by eliminating the general lack of understanding of the fact that liquidating housing wealth may not interfere with heirs utility. As far as supply is concerned, it should be stressed that the longevity risk to the supplier is much smaller than with a life annuity arrangement, as the collateral – the real estate value – may increase in value. Whereas longevity is in all cases good for the buyer and bad for the supplier, with a reverse mortgage loan this does not need to be the case. The other way around, whereas people buying a life annuity have “misguessed” if they die earlier than expected (with adverse consequence for the heirs), with a reverse mortgage the equity value of the home is for the heirs. This is paid for, implicitly, through a higher interest rate.

For a reverse mortgage market to develop, the loans should be fairly priced. Caplin (2000) argues that reverse mortgages are very expensive because the typical reverse mortgage borrower is very old, very poor and likely to suffer from health problems, and thus may be unable to take good care of the property. However, as we have argued in this paper, reverse mortgages should be regarded as a general financial planning tool. Mitchell & Piggot (2003) suggest that the government plays a substantial role in improving the efficiency of capital markets and providing safeguards for both borrowers and lenders, in order to support the development of a market for reverse mortgages. Ong (2008) highlights the unfavorable tax treatment as one of the reasons behind the scarce development of reverse mortgage market in the UK. When discussing the potential for reverse mortgages to increase pension income in Chile, Alonso et al. (2013) suggest a proactive role of the government to provide the regulatory infrastructure. This may require strict conditions to be met, as it is unlikely that providing financial counseling will do the trick when it comes to protecting borrowers. There is scope for explaining the concept and potential use to homeowners – notably the protection against longevity risk. Reed (2009) investigates whether the features of the product are correctly understood by a sample of elderly Australian homeowners. He draws on two different surveys: the first conducted by SEQUAL (Senior Australians Equity Release Association of Lenders) in 2008, interviewing 1,000 homeowners, and the second conducted by ASIC (Australian Securities & Investments Commission) in 2007 interviewing 29 homeowners who had already taken out the loan. The SEQUAL survey showed that, even though more than 70% of the respondents were aware of reverse mortgages, only 40% understood their basic features, specifically that no repayments were due and the house would not be sold. As for the ASIC survey, it revealed that many lenders had not explained the working of compound interest rates, or shown a projection of how much the loan would effectively cost over time. On the other hand, these characteristics are similar to the ones applying to any annuitization contract, and those are common everywhere.

7. Summary and conclusions

This paper has argued that reverse mortgages serve various purposes. They could become an integral part of life cycle planning, cushion adverse pension shocks in an environment in which pension risks are increasingly shifted to individuals, help people who discover too late that they have saved too little for retirement, or who are confronted with policy changes that affect retirement, provide retirees with the possibility of “splurging” at a moment in life when they are still healthy, enable people to continue living in the home that they feel attached too

and/or cover health care costs, and finally it could lead to welfare improvement through flexibility in the timing of bequests in an aging society.

Given these potential benefits, it may seem surprising that the market has hardly developed in the Netherlands. Some of the following factors can have contributed to this. Until recently pensions were assumed to be safe, and current pensioners have gone into retirement with very generous arrangements – some cohorts were even allowed to retire at the age of 57 without having to sacrifice income and pension benefits. Moreover, for the currently retired homeowners, the fiscal treatment of mortgage interest has always been and still is generous in the Netherlands, and in the past homeowners could easily get a second, interest-only mortgage on their home, benefiting from the increase in housing prices over a period of two decades. This may explain why less than ten percent of homeowners has heard about the concept of reverse mortgages.

Be that as it may, over a quarter of homeowners aged 45 and over has potential interest in a reverse mortgage loan once retired, and a minority of 40 percent is not or not at all interested. The interest is higher among people who fear pension cuts, underscoring the potential of reverse mortgage loans to cushion shocks in retirement income. Optimizing consumption seems to be the main goal, implying that people do not understand the benefits for bequest timing, and/or do not have a strong bequest motive.

This is not without policy implications. Almost all employees in the Netherlands are in a mandatory collective retirement scheme, without a say on the premium and the degree of risk taken with their pension wealth, whereas they have become the ultimate risk bearers. At the same time, they are quite risk averse when it comes to pensions. With a mandatory retirement age in the Netherlands, people cannot postpone retirement. They therefore have few instruments to cope with a pension income that does not enable them to maintain their living standard after retirement. The mere possibility to liquidate housing wealth would therefore improve welfare of retirees by enabling them to cushion pension shocks. Given demographics, it would also increase the possibilities for optimal bequest timing. Our study indicates that there is a latent demand for reverse mortgage loan. Despite this interest, knowledge of the product is still lacking, making the potential of this product, if well understood, even higher.

References

Aguiar, M. and E.Hurst (2008) Deconstructing Lifecycle Expenditure, *NBER Working Paper* 1389*3*, National Bureau of Economic Research

Alessie, R. , A. Lusardi and M.C. van Rooij (2007), Financial literacy and stock market participation, *DNB Working Paper* 146

Alonso, J., Lamuedra, M., Tuesta, D. (2013) Potentiality of reverse mortgages to supplement pension: the case of Chile, *BBVA Working Paper* 13/11

Beshears, J., Choi, J. J., Laibson, D., Madrian, B. C., & Zeldes, S. P. (2013). What Makes Annuitization More Appealing?. Journal of Public Economics.

Bodie, Zvi (2012), The Safety First Approach to Investing, *key note speech*, Conferenee on Pension Risk Management, Free University, March 15, Amsterdam

Bodie, Z. and H.M. Prast (2011), Rational pensions for irrational people: Behavioral science lessons for the Netherlands, *Netspar Discussion Paper* 09/2011-076

Borella M. and M. Rossi Asset Accumulation and Decumulation over the Life Cycle, The Role of Financial Literacy. Netspar Panel Paper, 2013, mimeo

Brunetti, M., E. Giarda and C. Torricelli (2012), Is financial fragility a matter of liquidity? An appraisal for Italian households, CBS

Caplin, A.S. (2000) Inertia in the US Housing Finance Market: Causes and Consequences. *Paper prepared for the joint AEA/AREUEA session,* New Orleans

Case, B. and A. Schnare (1994), Preliminary Evaluation of the HECM Reverse Mortgage Program, *Journal of American Real Estate and Urban Economics Association* 22 (2*)*

Chiang, L., & Krosnick, J. A. (2003). Measuring the frequency of regular behaviors: Comparing the 'typical week' to the 'past week.' *Sociological Methodology* 33, 55-80

Christelis, D., Georgarakos, D., Haliassos, M. (2013), Differences in Portfolios across Countries: Economic Environment versus Household Characteristics, *Review of Economics and Statistics* 95 (1), 220-236

Davidoff, T., Brown, J.R. and Diamond. P.A. (2005), Annuities and Individual Welfare, American Economic Review, 95(5): 1573-1590.

Davidoff, T. AND G. Welke (2005), Selection and Moral Hazard in the RM Market, *Mimeo*, UC Berkeley

Fornero, E., M. Rossi and M.C. Urzi Brancati (2011), Explaining why, right or wrong, (Italian) households do not like reverse mortgages, *Netspar Discussion Paper* 09/2011-086

Khandani, Amir E., Andrew W. Lo and Robert C. Merton (2009), Systemic Risk and the Refinancing Ratchet Effect, *MIT Sloan Research Paper* 4750-09; *Harvard Business School Finance Working Paper* 1472892

Kopczuk, W., Slemrod, J. (2005). Denial of death and economic behavior. *Advances in Theoretical Economics, 5(1).*

Laibson, D. (1997), Golden Eggs and Hyperbolic Discounting, *Quarterly Journal of Economics* 112, pp 443-477

Lang, Gunnar (2008), Reverse mortgages als Alterssicherungsinstrument in Deutschland, *ZEW Wirtschaftsanalysen*, Mannheim

Mayer, C. J., & Simons, K. V. (1994). Reverse mortgages and the liquidity of housing wealth. *Real Estate Economics, 22(2), 235-255.*

Mayer, C. J., & Engelhardt, G. V. (1996). Gifts, down payments, and housing affordability. *Journal of Housing Research, 7, 59-78.*

Merton, Robert C. (2006), Observations on Innovation in Pension Fund Management in the Impending Future, *PREA Quarterly*, Winter

Merton, Robert C. (2007), The Future of Retirement Planning, *CFA Research Institute*

Merton, Robert C. (2011), Financial Innovation in Residential Housing Finance: Funding, Risk Transfer, and Efficient Asset Use, *Princeton Lecture Series Observations on the Future of Financial Innovation and Engineering: Addressing Financial Challenges of the Economy,* September 28

Merton, Robert C. and Zvi Bodie (2005), Design of Financial Systems: Towards A Synthesis Of Function And Structure, Journal Of Investment Management 3 (1)

Mitchell, O. and J. Piggott (2003), *Final Report: Unlocking Housing Equity in Japan, Economic and Social Research Institute,* Cabinet Office, Government of Japan

Munnell, A.H., N. Orlova and A. Webb (2012), How Important is Asset Allocation to Financial Security in Retirement? *Center for Retirement Research at Boston College Working Paper No. 2012-13.* Available at SSRN: http://ssrn.com/abstract=2039385

Munnell, Alicia (2012), Reversing the Negative View of Reverse Mortgages

Nakajima, M. and I.A. Telyukova (2011). Reverse mortgage loans: a quantitative analysis. *Working paper,* UCSD

Ong, R. (2008). Unlocking Housing Equity through Reverse Mortgages: The Case of Elderly Homeowners in Australia, *International Journal of Housing Policy* 8 (1), 61 — 79

Poterba, J., S. Venti and D.Wise (2011). The Composition and Drawdown of Wealth in Retirement, *Journal of Economic Perspectives* 25(4), 95-118

Prast, H.M (2000). Herding and financial panics: a role for cognitive psychology?, *WO Research Memoranda (discontinued) 611*, Netherlands Central Bank, Research Department

Prast, H. (2003), *Psychology in Financial Markets: an Introduction to Behavioral Finance*, NIBESVV Publishers, Amsterdam

Prast, H.M, F. Teppa, and A. Smits (2012), Is Information Overrated? Evidence from the Pension Domain, *Netspar DP* 12/2012/50

Reed, R. (2009), *The Increasing use of Reverse Mortgages by older Households*, Faculty of Science and Technology Deakin University Melbourne Australia

Rodda, D. T., C. Herbert and K. Lam (2000), *Evaluation Report of FHA's Home Equity Conversion Mortgage Insurance Demonstratio*n, *Final Report,* Washington DC Department of Housing and Urban Development

Romiti, A., and M. Rossi (2012), Housing wealth decumulation, portfolio composition and financial literacy among the European elderly, CeRP – Collegio Carlo Alberto Working Paper, 2012.

Skinner, J. (2007), Are you sure you are saving enough for retirement? *NBER Working Paper* 2981

Stancanelli, E., and A. van Soest (2012), Joint Leisure Before and After Retirement: A Double Regression Discontinuity Approach, *IZA Discussion Papers 6698,* Institute for the Study of Labor

Statman, M. (1999), Behavioural Finance: Past Battles and Future Engagements, *Financial Analysts Journal*, 18-27

Tang, Paul (2013), *Discussion of Economics and Psychology of Reverse Mortgages: Evidence from the Netherlands,* Netspar Conference on Woningmarkt en pensioen (Housing market and pensions), Tilburg, April 10

Taskforce Verzilveren (2013), *Eigen Haard is Zilver Waard,* May

Teppa, F. and C. Vis (2012), The CentERpanel and the DNB Household Survey: Methodological Aspects, *DNB Occasional Study* 10 (4)

Van Rooij, M., C. Kool and H. Prast (2007), Risk-return preferences in the pension domain: Are people able to choose?, *Journal of Public Economics*, 91, 701-722

Venti, S. and D. Wise (1987), Aging, Moving and Housing Wealth. *National Bureau of Economics Research Working Paper* 2324

Wicke, Evelin (2008), Umgekehrte Hypothek – Ein Zukunftsmodell für Deutschland?, *Bankwirtschaftlice Schriftenreihe an der Fachhochschule für Wirtschaft,* Berlin

wwwa.nl/consument/hypotheken/floriusverzilverhypotheek

Appendix

Summary statistics

	Mean	Std.	Min	Max
Interest in reverse mortgage (5-pts)	2.740	1.189	1	5
Age	62.712	9.867	45	89
Age squared	4,030	1,260	2,025	7,921
Female (d)	0.372	0.484	0	1
Age diff with oldest child	23.447	11.794	0	46
Offspring (d)	0.820	0.384	0	1
Log(net household income)	7.925	0.399	6	9
Total wealth (in € 1000)	46.783	96.158	-40	1,454
Medium education (d)	0.269	0.444	0	1
Higher education (d)	0.412	0.493	0	1
Q-ratio	3.014	1.385	1	5
Sufficient savings (10-pts)	6.144	2.260	1	10
Expects pension cuts (10-pts)	6.446	2.242	1	10
Big spending wishes (10-pts)	4.427	2.704	1	10
Grow old in current home (10-pts)	7.606	2.556	1	10
Move to a smaller home (10-pts)	3.649	2.674	1	10
Move to a rented home (10-pts)	3.348	2.517	1	10
Trusts banks (10-pts)	4.563	2.110	1	10
Sufficient income (10-pts)	6.471	2.085	1	10
self-employed (d)	0.048	0.213	0	1
self-assessed health (5-pts)	2.176	0.718	1	5
self-assessed health worsened (5-pts)	3.038	0.615	1	5
Lower Class (d)	0.163	0.370	0	1
Chance of inheritance>€500,000	0.074	0.189	0	1
Bequest frame (d)	0.500	0.500	0	1
Bequest wish (10-pts)	5.961	2.701	1	10
Bequest frame * beq wish	2.996	3.576	0	10
Number of Mortgages	0.864	0.857	0	5
Second residence	0.054	0.226	0	1

Source: authors, based on DHS data. Total sample used for regression. Observations: 796

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