Learning to value annuities: the role of information and engagement

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April, 2019

ABSTRACT

Using an online experimental survey we investigate perception (in terms of understanding, riskiness and control) and valuation (elicited using iterative multiple price lists) of lifetime annuities relative to flexible drawdown products. We find that for those participants who are engaged with the experimental tasks information provision can substantially reduce or eliminate behavioral drivers of the complex task of valuation of annuities. Providing balanced information and multiple opportunities to learn about the key features of the products, including impact of potential outcomes using an online tool, narrows the gap between the willingness to pay and willingness to accept, and, offsets the effects of low financial capability, information framing and real world institutional settings.

Keywords: Information framing, experiments, annuity demand, cross-country analysis.
JEL Classifications: D14, D91, G11.

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1 Introduction and motivation

There has been a shift in most developed countries from guaranteed lifetime pensions, such as defined benefit (DB), to defined contribution (DC) pension schemes (OECD, 2017). This trend allows for alternative products such as phased withdrawals or lump sum arrangements which provide more flexibility than traditional pension arrangements. Examples include the U.K. following the abolition of mandatory deferred annuitization in 2015 (Cannon et al., 2016); Australia's superannuation system which allows retirement savings to be allocated to annuities, phased withdrawal products (known as account-based pensions) and lump sums (Bateman, 2016); and the Netherlands which is considering reforms which will provide more choice of pension plan withdrawals (Bovenberg and Nijman, 2017). As a result retirees are increasingly asked to select a portfolio of retirement benefit products - typically comprising a lifetime annuity product and a product which allows flexible withdrawals from a pension account.

However, poor knowledge of product features and of the risks faced in retirement may offset the advantages of freedom of choice. Choosing a retirement benefit or a portfolio of benefits is a complex decision. Life annuities and flexible withdrawal products can have an array of different options and characteristics which are often not well understood, particularly by those with low levels of financial capability or product knowledge (Bateman et al., 2016a). Moreover, the recent policy shift and introduction of new retirement income products has provided limited opportunities for social learning from peers or elders (Bernheim, 2002).

The growing literature on retirement benefit decisions has investigated optimal allocations to retirement benefit products, including annuities and flexible drawdown products (Maurer et al., 2013) and rational and behavioral explanations for lower levels of annuitization than predicted by theory (Brown, 2009). Behavioral explanations have explored information framing (Brown et al., 2008b; Agnew et al., 2008; Bockweg et al., 2018), mental accounts (Brown et al., 2017a), complexity and cognitive constraints as revealed by widely divergent values for the WTP and WTA annuities (Brown et al., 2017b), financial capability and effort in understanding product features (Bateman et al. 2016b), stickiness to defaults (Benartzi et al., 2011; Butler and Teppa, 2007), and the use of heuristics (Bateman et al., 2016a).

In this paper we contribute to the growing literature on retirement benefit decisions by studying the perception and relative valuation of lifetime annuities versus flexible drawdown products in a cross-country context where we provide multiple opportunities to learn about product features and the implication of potential choices. Our countries of investigation are Australia and The Netherlands which have similar multi pillar retirement income arrangements, yet quite different payout structures. The Dutch mandatory income

replacement pillar is almost always annuitized, while Australian retirees are offered choice of retirement benefit, with most taking flexible withdrawal products (Bateman et al., 2016b; OECD, 2017).

We designed and implemented an online experimental survey of annuitization choices using iterative multiple price lists (iMPLs) to elicit revealed preferences, which we fielded to representative samples of approximately 1,000 Dutch and 1,000 Australian pre-retirees aged 50-64 in June 2017. The experimental design involves five between-subject treatments - country (Australia, The Netherlands), marital status (single, married), household income (4 levels), information framing (consumption gain, consumption loss, investment gain, investment loss) and product endowment (WTA, WTP). To elicit annuitization preferences we presented participants six within-subject iMPL tasks. These tasks differ by the benchmark allocation of retirement assets between an annuity product, which we call a Lifetime Guaranteed Income product, and a phased withdrawal product, which we call a Flexible Account product. Before completing the six iMPL tasks participants are asked about their perception of the two products in terms of understanding, riskiness and level of control. This allows us to examine how participants perceive and value the Lifetime Guaranteed Income product relative to the Flexible Account product.

A feature of the experimental design is that participants are provided with multiple opportunities to learn about the two retirement benefit products. First, before completing the six iMPL tasks, participants are presented with general information about the two retirement benefit products (which differ by frame). Second, they then complete an incentivized product knowledge review quiz for which their responses are reported as "correct" or "incorrect". Third, participants are asked about their perception of the two products (in terms of understanding, risk and control), which induces them to further reflect on the product features. Fourth, when completing each of the six iMPL tasks participants are reminded of the key product features (which differ by frame), and finally, to assist with their choice for each iMPL, participants can elect to use an on screen interactive retirement calculator, which shows the possible implications of the take-up of the products. These design features allow us to investigate the impact of information provision and framing on annuitization decisions. Another feature of the experimental design is that participants are randomly assigned to either the WTP or a WTA condition, which allows investigation of the endowment effect. In addition, the six within-subject iMPL tasks have different benchmark product portfolios which enables investigation of access to liquidity. The comprehensive set of covariates we collect allows us to examine the influence of personal characteristics, access to financial resources, financial capability, propensities to save and plan for retirement and personality traits, and perceptions on and valuation of annuities relative to flexible drawdown products.

In terms of perceptions, we find that participants who are financially competent and engaged with the experimental survey are better able to understand the product features. Framing effects are present for the Dutch, and participants who have thought more about retirement planning and have a need for income in retirement have a better understanding of the Lifetime Guaranteed Income product. Institutional effects are strong, with Australian participants showing less understanding of the Lifetime Guaranteed Income product, with which they are unfamiliar due to Australian design where flexible drawdowns are the product of choice and the voluntary annuity market has, until recently, been almost non-existent (Iskhakov et al., 2015).

For the valuation of annuities (the Lifetime Guaranteed Income product) relative to the flexible drawdown product we confirm earlier studies by finding a gap between the WTP and the WTA. However, the gap in our study is much smaller than in earlier work (Brown et al., 2017a), which we attribute to our experimental design, specifically the repeated opportunities to learn about the products and the provision of a retirement calculator to illustrate potential outcomes. We find limited effects of information framing, which is restricted to participants less engaged in the experimental survey, and confirm earlier studies by finding the influence of wealth illusion: that is, participants with higher income value annuities more than those with lower income.

Our study is related to several strands of the literature investigating demand-side explanations for the miniscule interest in longevity products, including the role of information framing; cognition, effort and engagement; and the endowment effect.

Literature on "framing" and annuitization decisions has focused on the impact of alternative presentations of the key product features. Brown et al. (2008a) show that participants are more likely to consider annuities a good retirement choice when presented in a consumption frame (emphasizing spending and living standards) relative to an investment frame (focusing on rates of return and assets). Similarly, Beshears et al. (2014) find significant reduction of the proportion of wealth annuitized under the investment frame and the frame highlighting flexibility and control of a lump sum. Agnew et al. (2008) consider the impact of loss and gain frames and find that participants are more (less) likely to opt for the annuity option if the provided information favorably biased towards annuities (investment). In the context of Social Security Benefits (SSB) claiming in the U.S. Brown et al. (2016) find no effect of consumption frame versus investment frame although this could be explained by U.S. retirees being more familiar with SSB than annuities, which would make them more capable of making the tradeoff between regular income and a lump sum. Finally, in the context of a large Dutch pension fund Bockweg

et al. (2018) find heterogeneity of framing impacts across demographics, risk attitude and institutional environment.

We contribute to this literature by studying consumption gain/loss, investment gain/loss framing of annuities in a cross country context to investigate the impact of real-world institutional differences. We do so by implementing the same experimental task to Dutch (familiar only with full annuitization of state and private pension benefits) and Australians (familiar with annuitized state pension benefits but full flexibility of private pension benefits). We also supplement the "framed" information with multiple opportunities to learn about product features and potential outcomes. While we find minimal framing effects overall we do find that real-world institutional settings matter for perceptions of the flexible drawdown products by the Dutch, who have no real-world experience with such products. As well, less engaged participants are more likely to be influenced by information framing.

More recent literature has considered the importance of cognition and effort on retirement benefit decisions. Brown et al. (2017b) find that complexity of an annuity product reduces participants' ability to value annuities although broad bracketing - jointly thinking about the annuitization decision and the pace of how quickly to spend down assets in retirement - increases participants ability to value these products. Bateman et al. (2016a) find that more numerate participants who put effort into understanding product features chose more longevity insurance at higher ruin risks. We contribute to this literature by investigating the impact of repeated opportunities to learn about product features as well as potential outcomes, using an interactive calculator on perception and valuation of annuities of both engaged and less engaged participants. We less find less confusion in annuity valuation (measured by the gap between WTP and WTA) than in prior studies.

Finally, a related strand of the literature on the attractiveness of annuities has investigated the effect of the reference point (or endowment effect). Brown et al. (2016), Brown et al. (2017b) and Brown et al. (2017a) all show a significant endowment effect (status quo effect) in the valuation of SSB. For those Americans in receipt of SSB the value of buying an additional $100 monthly SSB is much less than selling the additional $100 monthly SSB. In related work Reb and Connolly (2007) show that the main driver of the divergence between WTP and WTA is due to subjective feelings of ownership.[1]. As in these studies we investigate the endowment effect by analyzing the gap between WTP and WTA. We also find an

[1]Whereas delaying SSB is a way to annuitize wealth, caution should be taken to extrapolate these findings to private retirement benefit decisions. First, almost half of Americans either claim SSB at the earliest age that they qualify for it or when they retire (Munnell and Chen, 2015). This indicates that they might not see delaying SSB using savings to provide an income for some years- as purchasing a (cheap) annuity. Second, people's attitude towards the government and the (political) risk associated with SSB may play a role in the perceived attractiveness of SSB

endowment effect, however the gap (between WTP and WTA) in our study is much smaller, particularly for engaged participants. We attribute this to our experimental design which reduces cognitive load through multiple opportunities to learn about the product features and the interactive calculator which provides potential outcomes from alternative product choice.

The paper proceeds as follows. Section 2 describes the experimental design, including the five between-subject treatments and the six within-subject iMPL tasks, and describes the covariates we collect. Section 3 reports regression results on perceived understanding of the retirement benefit products, while section 4 analyses the factors that explain the valuation of annuities relative to flexible drawdown products. Section 5 concludes.

2 Experimental survey design

We designed and implemented an experimental survey to investigate the effect of information provision (including framing), the endowment effect, and the influence of personal characteristics on annuitization decisions. In the experimental setting participants are asked to select portfolios of retirement benefit products comprising life annuity and phased withdrawal products. We refer to the lifetime annuity as a "Guaranteed Lifetime Income product", and the phased withdrawal product as a "Flexible Drawdown product", and carefully describe key product features in order to address pre-existing lack of awareness and understanding (Bateman et al., 2016a). The Guaranteed Lifetime Income product includes state pension payments, and we remind participants of this each time they complete a task. We utilize revealed preferences elicited from iterative multiple price lists (iMPL) to allow us to control for information provision, and the experimental setting allows us to conduct a cross country analysis by minimizing effects induced by institutional arrangements.

In June 2017 we surveyed 1,000 Australians and 1,003 Dutch aged 50-64 who are either not retired or part of a couple where at least one is not retired. Participants were sourced from a panel maintained by Survey Sampling International who manage a subject pool of over 500,000 Australians and 300,000 Dutch. Participants were paid up to A$7 in Australia and €5 in the Netherlands for a completed survey, which had a median time of completion of 35 minutes. Screen shots of the Australian and Dutch surveys are available in the Supplemental Materials, and live versions of the two surveys can be found at `http://survey.us.confirmit.com/wix/p3080148164.aspx` (Australian version) and `http://survey.us.confirmit.com/wix/1/p3082840831.aspx` (Dutch version).

2.1 iMPL methodology

The use of multiple price lists (MPL) to elicit willingness to pay has a long tradition in economics and decision making: see for example Kahneman et al. (1990). The advantage of the MPL method is that it is relatively straightforward to elicit preferences where participants are presented with a range of ordered prices and asked to indicate "yes - I would choose" or "no I would not choose" for each price. A disadvantage, observed in prior studies, is that participants may exhibit multiple switching behavior, in contravention to economic theory (see e.g. Bruner, 2011; Holt and Laury, 2002 or Goeree et al., 2003).

To prevent such seemingly irrational behavior, Harrison et al. (2005) introduced switching MPLs (sMPL). In a sMPL monotonicity is enforced by asking a participant to select one switching point. This is enabled by using a price list where the participant indicates for one of the trade-offs whether he prefers 'Option A' or 'Option B', and the other trade-offs are filled automatically. Hence, for the trade-offs on the price list above the one selected, the choices will automatically be set to 'Option A' and for the trade-offs in the list below the one selected the choices will automatically be set to 'Option B'. The sMPL mechanism has several advantages. First, it reduces effort since the participant is required to select just one of the options to indicate preferences for all trade-offs on the list. Second, as the order of attractiveness of the trade-offs on the list is explicit, it enhances participant understanding of the task, which reduces cognitive load.

An extension of the sMPL method is the iterative MPL (iMPL) method which consists of multiple (typically two) rounds of sMPL. In the second round participants are asked to refine their choice from the first round. The range of alternatives presented in this second round are between the two alternatives from which the participant has switched from 'Option A' to 'Option B' in the first round. Andersen et al. (2009) show that the iMPL method generates more precise estimates and tends to mitigate initial presentation and order effects that are present with the MPL method. This is particularly important in retirement savings allocation, as previous studies (see e.g. Hedesstrom et al., 2004; Bateman et al., 2017) have shown that such decisions are prone to heuristic choice rules.

The advantage of using iMPL is that, with limited number of alternatives presented to a participant, we can create a multiple of this number of alternative switching points (including always choosing Option A and always choosing Option B) without overloading the participant with choice alternatives. In the experimental task, which we will discuss in Section 2.3.4, the participant has to consider only five trade-offs in the first stage of the iMPL and four trade-offs in the second stage. This creates 30 switching points. Yet, in order to implement the iMPL, we need participants to switch only once.

Table 1: Between subject treatments

Treatment	# of conditions	Characteristics of conditions
Country of residence	2	NL/AU
Marital status	2	Couple/Single
Retirement income (for full annuitization)	4	See Table 2
Information framing	4	Consumption Gain/ Consumption Loss/ Investment Gain/ Investment Loss
Product endowment	2	WTA/WTP

2.2 Between subject treatments

The experimental survey is designed with five between-subject treatments and, as discussed in Section 2.3.5 six within-subject treatments (iMPL tasks). The survey starts with preliminary questions to screen for the required sample characteristics and to allocate participants to the between-subject treatments. The treatments are summarized in Table 1.

The first treatment is the country of residence. There are two treatment groups: Australia and the Netherlands. The difference between these treatments is the language of the survey instrument (English versus Dutch) and the currency (A$ versus €) used in the survey and tasks. Currencies are converted using pricing power parity (PPP).[2]

The second treatment relates to the marital status of the participant with two treatment groups: single, part of a couple. We consider the annuitization decision to be a household decision and therefore this distinction is relevant. For participants who are part of a couple, the annuity (referred to in the experimental task as a Lifetime Guaranteed Income product) is joint with two-thirds reversion to the survivor, whereas a single participant is presented with a single life annuity. Therefore, information for a participant who is part of a couple is presented as "you and your partner", whereas for a single it is presented as "you", and the values in the experimental task use different prices for the single life annuity and the joint and survivor annuity.

The third treatment relates to the participant's net retirement income. Participants are allocated to one of four post retirement (net) income groups using their answer to a question on current gross household income which we ask at the beginning of the survey. The allocation is made such that it roughly aligns to the household income the participant typically could expect when retired. We take this approach to ensure that a participant's hypothetical retirement wealth (either (partially) annuitized or not) in the experimental context is reasonably well aligned with their personal circumstances. The advantage of doing so is twofold. First, it makes the experimental task more relevant to the participant

[2]Using OECD PPP, €1 = A$1.729958 see `http://stats.oecd.org/Index.aspx?datasetcode=SNA\_TABLE4`.

and reduces the possibility that the participant is alienated by an unrealistic hypothetical situation. Second, the treatment allows us to investigate the effect of the retirement income distribution on the attractiveness of annuities.

We use a participant's current gross household income as a proxy for post-retirement income, rather than their actual retirement savings at retirement, for two reasons. First, it allows us to perform a cross-country analysis between two countries with two different retirement systems (e.g. in the Australian DC system the accumulated balance is actual retirement savings, whereas in the Dutch DB system, retirement savings are represented as accrued retirement income). Second, we expect that participants may not know their current retirement savings, let alone the retirement savings they would have accrued by the time they retire. Given that both Australia and The Netherlands have a mandatory retirement saving scheme, we judge that using household income as a proxy may have a smaller reporting error than a retirement savings question. A further advantage of using the income distribution (and state pension level) in Australia and the Netherlands is that they are very comparable, which makes it a suitable mechanism for allocating participants to one of four treatment groups in the cross-country analysis. The cut-off points for gross household income are set using Australian household income quartiles.[3] The four income treatment groups (net retirement income level in case of full annuitization) for each of Australia and the Netherlands are presented in Table 2.[4]

The last two treatments relate to the framing of the product information and the product endowment, which are discussed in detail in the next subsection.

2.3 The experimental task

After the initial screening and income treatment allocation question the participant proceeds to the experimental task, which has six stages. First, the participant is presented with information about the two retirement benefit products included in the experimental task. Second, the participant completes an incentivized product knowledge quiz. Third, the participant is asked about his/her perception of the two

[3]The numbers are rounded from ABS Table 6.4 `http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6523.02013-14?OpenDocument` and rounded to the closest 2,500. Dutch values were obtained by converting these values into euros using PPP and rounded to the closest 2,500. These align well with the Statistics Netherlands average gross household income for 55-60 year old of €17,500; €35,300; €60,800; and €128,700 for the four quartiles.

[4]For the middle income groups, the allocated net retirement income are set by taking the average of the lower and upper income levels for both the Netherlands and Australia (converted using PPP) and multiplied with 0.7 (income group 2) and 0.65 (income group 3) to account for income tax and replacement rate. For income group 4 we take the average between the Netherlands and Australia (using PPP) of the lower level of income group 4 plus half of the increment of income group 3 and multiplied that with 0.6. For income group 1 we take the average between Australia and the Netherlands (using PPP) of the corresponding upper income level and multiply it with 0.82 (note that for people with only state pension, Australians do not pay any income tax, and Dutch only pay around 5% average income tax).

Table 2: Household income levels

Group	Gross household income		Full annuitized
	Lower level	Upper level	retirement income (net)
	Australia (A$)		
1		47,500	38,980
2	47,500	79,999	44,261
3	80,000	124,999	67,047
4	125,000		90,959
	Netherlands (€)		
1		27,500	22,533
2	27,500	44,999	25,585
3	45,000	74,999	38,756
4	75,000		52,579

products. Fourth, the iterative multiple price list (iMPL) method is carefully explained to the participant using an example. Fifth, the participant completes the experimental component of the survey comprising six within-subject treatments (iMPL tasks). Sixth, for each of the six treatments the participant is asked how likely it would be that they would actually exchange the one retirement benefit product for the other, given their responses in the experimental task.

2.3.1 First stage: Information and information framing

The experimental task begins with the presentation of general information about the experimental component of the survey and the tasks to be completed. Participants are informed that they will be presented with information about two retirement benefit products and will be asked to complete a product knowledge quiz for which they can earn additional monetary rewards. We include the incentivized product knowledge quiz to encourage participants to learn about the products and their features to increase the likelihood that they make informed decisions in the iMPL tasks. Participants are then randomly assigned to one of four framing treatment groups and receive "framed" explanations of the general features of the two retirement benefit products. The text of the general features of the two retirement benefit products for the four frame treatments is presented in Table 3.

Framing in the context of annuitization has been considered in two dimensions, namely consumption versus investment framing and gain versus loss framing (Agnew et al., 2008; Brown et al., 2008b; Bockweg et al., 2018). The four framing treatments we consider are: consumption gain, consumption loss, investment gain and investment loss. When participants are allocated to a particular frame treatment, this applies to both retirement benefit products. Relevant words are emphasized by presenting them in bold. In the consumption frame the general product information informs the participant of the effect of the

Table 3: Frames for general product features

Guaranteed Lifetime Income product	**Flexible Account product**
Consumption Gain	
This product provides guaranteed **income** for your regular **expenses** for as long as you and your partner live, even if you or your partner live longer than expected. The **more** you buy of this product the **more** you have for regular **expenditures** for the rest of your life.	This product allows you to choose you and your partners **income** level depending on your **expenses**. If the account balance is **sufficient** you will be able to pay for unexpected **expenses** while maintaining the same standard of living. The **more** you buy of this product the **higher** the flexibility you will have to match your **expenditures**.
Consumption Loss	
This product provides guaranteed **income** for your regular **expenses** for as long as you and your partner live, even if you need more for unexpected **expenses**. The **more** you buy of this product the **less** flexibility you have for unexpected **expenses**.	This product allows you to choose your **income** level depending on you and your partner's **expenses**. If the account balance is insufficient you will not be able to pay for unexpected **expenses** and you may not be able to maintain your **standard of living**. The **more** you buy of this product the **lower** your flexibility to match **expenses** when your account balance is insufficient.
Investment Gain	
This product provides you with a guaranteed **return** for as long as you live even if the financial markets perform poorly. If you or your partner **live long** then you get **more** than you paid for. The **more** you buy of this product the higher the **gain** when you **live long**.	This product allows you to choose your **investment portfolio**. The more risk you're willing to take, the **higher** the expected **return**. Any remaining account balance is inherited by your dependents or estate when you and your partner die. The **more** you buy of this product the **higher** your account balance if financial markets perform **well**.
Investment Loss	
This product doesn't allow you to take **any risk**. If the financial markets perform well the value of the product will **not increase**. If you and your partner **die early** then you get **less** than you paid for. The **more** you buy of this product the **more** you **lose** when you or your partner do **not live long**.	This product allows you to choose your **investment portfolio**. The less risk you're willing to take the **lower** the expected **return**. Your **account balance** might be insufficient if you or your partner live long. The **less** you buy of this product the **lower** your **account balance** if the financial markets perform well.

products on possible expenditure patterns by emphasizing the words income, expenses and standard of living. In this frame, the trade-off between the two products is having certainty about lifelong income versus having the flexibility to match income with (unexpected) expenditures. In the investment frame the information provided informs the participant of the effect the products have on possible annual returns, by emphasizing the words return, portfolio and account balance. In this frame, the trade-off is between the possibility of earning an excess return versus hedging risk. This occurs in the financial market domain as well as the mortality domain (e.g., outliving your money, setting aside bequests). A further difference is that the investment frame includes information on whether the product enables bequests, which is not included in the consumption frame. In the gain frame the general product information is presented in a positive manner - that is, emphasizing the benefits or advantages of the product. On the contrary, in the

loss frame the general product information is presented in a negative manner that is, emphasizing the downside of the products.

Following the provision of "framed" general product information, the participant is presented with information about the specific product features. As compared to the presentation of the general product features, which differs according to the framing treatment to which the participant is allocated, the specific product features are designed to be frame-neutral and are therefore the same for all participants (with only slight differences when the participant had a partner). For example, frame-neutral product features for the Lifetime Guaranteed Income product and the Flexible Account product are presented in Table 4 for participants who are part of a couple. For singles, "you and your partner" is replaced by "you" and the product feature "What happens if I or my partner dies?" is not presented.

Table 4: Product features

	Lifetime guaranteed income product	Flexible account product
How much income will I receive?	You and your partner will receive a regular income	You can choose how much to withdraw each month
How long do payments last?	Your regular income will be paid for as long as you or your partner live	You and your partner can continue to withdraw as long as your account balance is positive
What happens if I or my partner dies?	If one of you passes away, the surviving spouse will receive the regular income. However, the income will be reduced by one third (similar to age pension)	If one of you passes away, any remaining money in your account will be left to the surviving spouse
What happens if I and my partner die?	If both you and your partner have passed away, there will be no inheritance for your dependents or your estate	If both you and your partner have passes away, the remaining money in your account will be inherited by your dependents or your estate
What happens if the prices of things I buy increase?	Your regular income is automatically adjusted to the price level	The amount you withdraw is not automatically adjusted to the price level. However, you can increase the amount you withdraw when the prices increase
What happens if there are fluctuations in financial markets (such as interest rates or share prices)?	Your regular income will be unchanged	Your account balance will fluctuate with financial markets
What happens if I live longer than expected?	As long as you or your partner live, you will receive a regular income	When you or your partner live long you may run the risk of outliving your account.

2.3.2 Second stage: Product knowledge quiz

Following presentation of general product information (by frame treatment) and the specific product features (frame-neutral), participants complete a product knowledge quiz. Here the participant is asked

to indicate which product features relates to which of the two retirement benefit products. The goal of the product knowledge quiz is twofold. First, to incentivize participants to learn about the products, to enable them to make informed choices in the experiment task. Second, to provide participants with feedback on their performance (product knowledge) by providing the correct answers (to any incorrectly answered questions) once they had submitted the answers. Providing feedback for incorrect answers gives the participants another opportunity to learn about the product features. A screenshot of the product knowledge quiz, including the feedback screen is presented in Figure 1.

Figure 1: Product knowledge quiz.

Each statement applies to only one product.

	Lifetime Guaranteed Income Product	Flexible Account Product
A regular payment is received for as long as my partner and I live.	◉	○
My partner and I will have money in an account which we can access at any time. We can choose the amount we receive.	◉	○
If both my partner and I die, payments stop and the remaining value of the product will be inherited by our dependents or estate.	○	◉
Payments automatically adjust with price increases.	○	◉
Our account could fluctuate with financial markets.	○	◉

Below are the results; showing the correct answer to each statement with a green tick and whether your response was correct or incorrect:

	Lifetime Guaranteed Income Product	Flexible Account	Your Responses
A regular payment is received for as long as my partner and I live.	✓		Correct
My partner and I will have money in an account which we can access at any time. We can choose the amount we receive.		✓	Incorrect
If both my partner and I die, payments stop and the remaining value of the product will be inherited by our dependents or estate.		✓	Correct
Payments automatically adjust with price increases.	✓		Incorrect
Our regular payments could fluctuate with financial markets.		✓	Correct

From Table 5 we observe that participants have on average four out of five questions correct, but only 44% (43% in the Netherlands and 45% in Australia) made no mistakes. The questions with most mistakes concern whether the remaining wealth can be a bequest and whether the retirement benefit product is subject to financial market risks. Slightly more Australian than Dutch participants did not know that the Flexible Account product's remaining account balance could be a bequest. However, surprisingly, slightly more Dutch than Australians did not know that payments from the Guaranteed Lifetime Income product do not depend on the financial market, despite lifetime annuities being the most prevalent (and often only) type of retirement benefit. A possible explanation is the close link between benefit indexation and the funding ratio of the fund in Dutch pension design, which ordinary people may mistakenly attribute

to financial market performance.

Table 5: Product knowledge quiz

	Percentage correct answers per question		
	Netherlands	Australia	Sample
Q1	95.21%	92.40%	93.81%
Q2	83.35%	85.10%	84.22%
Q3	71.29%	65.50%	68.40%
Q4	69.69%	70.50%	70.09%
Q5	75.17%	86.10%	80.63%
Average	78.94%	79.92%	79.48%

	Total number of mistakes		
	Netherlands	Australia	Sample
0	42.87%	45.20%	44.03%
1	25.12%	22.20%	23.66%
2	17.25%	20.70%	18.96%
3	13.46%	10.80%	12.13%
4	1.20%	1.10%	1.15%
5	0.10%	0%	0.05%

The left panel of the table displays the percentage of participants who had, for each of the questions displayed in Figure 1, the correct answer. The last row of the left panel corresponds to the average of the five questions of the percentage of participants who had the correct answer. The right panel displays the percentage of participants who had 0 to 5 mistakes in the product knowledge quiz.

2.3.3 Third stage: Product perception

Following completion of the product knowledge quiz participants are asked about their perception of each retirement benefit product in terms of understanding of the product, riskiness of the product, and level of control that the product would allow. Responses were collected using a Likert scale with values between 0 and 10. These variables aim to measure the individual's perceived ambiguity, risk and flexibility associated with each of the products and these questions are asked before the six iMPL tasks, to induce participants to further consider the features of the products before completing the choice tasks.

Table 6 reports responses to the 0-10 Likert scale. We observe that on average, participants in Australia and the Netherlands report a similar perceived understanding of the products. The Lifetime Guaranteed Income product is seen by both subsamples as a less risky product. More Dutch participants report a higher perceived risk for the Flexible Account product compared to the Lifetime Guaranteed Income product. This is expected given their unfamiliarity with the Flexible Account product. The Dutch participants self-report a slightly better understanding of the Guaranteed Lifetime Income product (lifetime annuity) than the Australian participants, which is consistent with previous studies which identified poor knowledge of seemingly standard benefit product features (Bateman et al., 2016a). Australian participants respond that Flexible Account products give them much more control, in contrast to the Dutch participants. This is expected as Australians are familiar with Flexible Account products[5], whereas the

[5]The account-based pension a type of flexible account product is the most popular type of retirement benefit product (Bateman and Piggott, 2010).

Table 6: Product perception

	-10 to -6	-5 to -2	-1	0	1	2 to 5	6 to 10
Understanding NL	0.10%	1.10%	3.49%	68%	17.25%	9.17%	0.90%
Understanding AU	0%	2.20%	6.60%	76%	10.10%	4.80%	0.30%
Understanding	0.05%	1.65%	5.04%	71.99%	13.68%	6.99%	0.60%
Riskiness NL	0.40%	5.28%	5.38%	23.93%	6.08%	32.10%	26.82%
Riskiness AU	0.80%	5.10%	5.50%	26.80%	8.60%	35.50%	17.70%
Riskiness	0.60%	5.19%	5.44%	25.36%	7.34%	33.80%	22.27%
Control NL	15.45%	18.25%	6.48%	28.61%	8.37%	17.75%	5.08%
Control AU	23.50%	29.90%	7.40%	25.80%	5.70%	6.50%	1.20%
Control	19.47%	24.06%	6.94%	27.21%	7.04%	12.13%	2.15%

This table displays the difference in the response to the questions for the Lifetime Guaranteed Income product and the Flexible Account product. A higher value implies that the Lifetime Guaranteed Income product is perceived to have more favorable features than the Flexible Account product. The top panel corresponds to the question: "How well do you think you understand the features of ...?". The middle panel corresponds to the question: "How risky do you think the .... is?" The lower panel corresponds to the question: "How much control do you think you have with the ...?" The first row of each panel includes the only Dutch participants, the middle rows only Australian participants and the last rows both Dutch and Australian participants.

Dutch are more familiar with lifetime pensions (a form of Lifetime Guaranteed Income product).

2.3.4 Fourth stage: iMPL task instructions

The aim of each iMPL task is to identify the switching point in preferences between two portfolios of the two retirement benefit products - the Lifetime Guaranteed Income product and the Flexible Account product (designated as "Option A" and "Option B"). Before participants proceed to the six iMPL tasks, they are presented with an example of the iMPL method over a series of five screens.[6] The first screen provides an overview and on the following four screens the participant is taken through an example of the iterative multiple price list choice task. To reduce the likelihood that the worked example would guide participant decisions in the actual iMPL tasks, the example avoids monetary amounts which are similar to those presented in any of the four income treatments. On the first screen of the example, the trade-off between "Option A" and "Option B" for first row of the first stage of the interactive multiple price list (iMPL) is explained. The second screen explains the trade-off for the last row and the third screen for a row in the middle. The last screen (see Figure 2) provides information about stage two - the iterative part of the iMPL task.

[6]The theoretical explanation of the iMPL task is provided in Section 2.1.

Figure 2: Example.

Example 4/4

Once you decided your choice and have clicked ">>" you are asked to make a more refined choice. For example, if you chose Option A in the second row, but Option B in the third row as shown below:

Option A		Option B		Preferred Option	
Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Option A	Option B
$900,000	$35,000	$0	$35,000	◉	○
$900,000	$35,000	$0	$57,500	◉	○
$900,000	$35,000	$0	$80,000	○	◉
$900,000	$35,000	$0	$102,500	○	◉
$900,000	$35,000	$0	$125,000	○	◉

You will next get the following question:

Please refine your choice. Cast your eye down the table and select the first row for which you prefer Option B over Option A

Option A		Option B		Preferred Option	
Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Option A	Option B
$900,000	$35,000	$0	$60,000	○	○
$900,000	$35,000	$0	$65,000	○	○
$900,000	$35,000	$0	$70,000	○	○
$900,000	$35,000	$0	$75,000	○	○

After you click ">>" you will get a similar task, but with different amounts in the options.

2.3.5 Fifth stage: main experimental task

Following the worked example, participants proceed to the six iterative multiple price list (iMPL) tasks. For each iMPL task, the general product features for the two retirement benefit products are presented at the top of the screen, consistent with the framing treatment to which the participant has been allocated (see Table 3). This ensures that participants are reminded of the "framed" product features as they complete each task.

For each iMPL task, the participant is asked to indicate preferences for first five (stage one), then four (stage two) alternative trade-offs between two portfolios of retirement benefit products (which can be purchased with the wealth to which they have been allocated). That is, the participant is asked to indicate whether he prefers the portfolio of retirement benefit products in Option A or the portfolio of retirement benefit products in Option B. The portfolios comprise some amount in a Flexible Account product and some amount as a Guaranteed Lifetime Income product. For a given iMPL task, Option A has the same allocation to the retirement products in all the alternatives (the five alternatives in stage one and the four alternatives in stage two). In Option B either the Lifetime Guaranteed income product or the Flexible Account product has an increasing allocation (as one moves between alternatives in the

multiple price list), whereas the value of the other product, whether it be the Flexible Account or the Lifetime Guaranteed Income product), remains the same for all alternatives.

To assist participants with a given task, a simple retirement calculator appears under each choice set showing the possible implications (of the product allocations) for the drawdown of the products. The retirement calculator provides two possible draw down patterns, one for the combination of products in Option A, and one for the combination of products in Option B. For Option B we display the possible draw down pattern for the first alternative for which the participant prefers Option B over Option A. Note that Option A has the same allocation to the two retirement benefit products in the five alternatives, so the possible draw down pattern for Option A is the same for all the shown alternatives in a particular choice task. The retirement calculator allows participants to adjust four assumptions relating to the product features which could make the products attractive: 1) the last age at which the Flexible Account makes a payment (where the range of possible values is between 80 and 110, in 5-year intervals, with a default of 80 years); 2) the amount of money the participant prefers to set aside for unexpected expenditures or bequests (where the participant can choose any value and the default is set at zero); 3) the option to have a higher income in the first five years (either yes or no, with the default set at no); and 4) the expected return in excess of the inflation rate for the Flexible Account product (where options range from 0% to 7%, with increments of 1%, and the default is set at 1%). The calculator defaults are set the first time the calculator is used, however, in later iMPL tasks, the default settings are those values previously used by a given participant (which may be the original or revised assumptions). We take this approach because, for a given participant, assumptions should be consistent across iMPL tasks, and by doing so we reduce required effort as the participant does not have to re-set his preferred assumptions for each task.

Between-subject treatment: Product endowment

Participants are allocated to one of two product endowment treatments: either a willingness to pay (WTP) for additional lifetime income from the Guaranteed Lifetime Income product or willingness to accept (WTA) a reduction in lifetime income from the Guaranteed Lifetime Income product. In the WTP (WTA) treatment, the values of the Guaranteed Lifetime Income (Flexible Account) product in Option B are increasing and higher than in Option A. Option B has a lower Flexible Account (Guaranteed Lifetime Income) than in Option A. The implicit question for the participant in the WTP frame is -suppose you have the portfolio in Option A- would you decrease your Lifetime Guaranteed Income by A$X to receive an additional A$Y in your Flexible Account? The implicit question for the participant in the WTA frame is -suppose you have the portfolio in Option A- would you reduce your Flexible Account by A$X

to receive an additional A$Y Lifetime Guaranteed Income. The value of X depends on the question and the value of Y increases with the alternatives in the list?

Within-subject treatments: Product allocation

In the experimental task, each participant is shown six different iMPL choice sets. For each of these six choice sets we first constructed the benchmark options A and B with an allocation to the two retirement benefit products. The next four alternatives in each choice set are based on composition of the benchmark options. The benchmark portfolios in the six iMPL choice sets vary by the proportion of annuitized retirement wealth in addition to state pension. This retirement wealth which can be used to supplement the Lifetime Guaranteed Income product or be incorporated into the Flexible Account product. This is calculated by the difference between the retirement income, as given in Table 2, and the level of state pension. The state pension income level for couples is set by taking the average of €20,000 and A$35,000. For singles it is two-thirds of that amount.

Since there are six choice sets, there are six benchmark portfolios with levels of annuitization as follows: 100% annuitization for Option A and 2/3 annuitization for Option B; 100% for Option A and 1/3 for Option B; 100% for Option A and 0% for Option B; 2/3 for Option A and 1/3 for Option B; 2/3 for Option A and 0% for Option B; and 1/3 for Option A and 0% for Option B. The fraction of retirement savings which is not annuitized is converted into the Flexible Account using an annuity factor of 23.00 for couples and 17.38 for singles.[7] The order of the six within-subject treatments (choice sets) is randomized to prevent order effects driving the results as participants progress through the treatments.

Alternatives in the task

Whereas the WTP frame shows increasing iMPL values for Option Bs Guaranteed Lifetime Income product, the WTA frame has increasing values in Option As Flexible Account product. The level of variation depends on the benchmark portfolio and set multiplication factors. For the WTP (WTA) treatment, the alternative values for Option B (Option A) are set by multiplying the difference between the benchmark Guaranteed Lifetime Income (Flexible Account) in Option A (Option B) and adding that to the Guaranteed Lifetime Income (Flexible Account) of Option B (Option A). For the first round of the iMPL the multiples are 0.5, 0.707, 1, 1.414, and 2 (see first column of Table 7). Thereafter, in the second round, depending on the choice in the first round, the participant is shown four alternatives. The increments are chosen such that they are log-linear (see columns 3-6 of Table 7).

The alternative at which the participant switches in the second round is used to determine the price

[7]The annuity factors were calculated as the net present value of an income stream with a duration of 26 (for couples) or 19 (for singles) years and an interest rate of 1%.

Table 7: Money's worth ratio in the various alternatives

First round		Second round			
	Always choose Option A:	0.351	0.388	0.429	0.475
0.500	Switch to Option B in first row:	0.522	0.569	0.621	0.677
0.707	Switch to Option B in second row:	0.738	0.805	0.878	0.958
1.000	Switch to Option B in third row:	1.044	1.139	1.242	1.354
1.414	Switch to Option B in fourth row:	1.477	1.610	1.756	1.915
2.000	Always choose Option B:	2.104	2.328	2.577	2.852

This table displays the money's worth ratio used for setting the alternatives in the task for the WTP treatment. For the WTA treatment the inverse of the numbers is used. The money's worth ratio is the actuarially fair price of the income stream divided by the price of the Lifetime Guaranteed Income product. A number smaller (larger) than one implies that the annuity is more (less) expensive than the actuarially fair price.

they are willing to pay for an annuity. This includes always choosing Option A, to which we assign the value 1/3. In case of the WTA (WTP) treatment the price of the annuity for which the participant is willing to buy is equal to the price of the annuity multiplied by (the inverse of) the midpoint of the values in Table 7 corresponding to the rows where the participant switches. For the WTA frame the values in Table 7 can thus be interpreted as the multiple of a fair price, whereas for the WTP treatment it would be the inverse of the values in the table.

2.3.6 Sixth stage: Likelihood to act

One of the disadvantages of using the MPL format is that hypothetical experimental responses might be prone to substantially overestimate WTP (see, for example Cummings et al., 1997).[8] Blumenschein et al. (2008) found that assessing the degree of certainty of the hypothetical responses with Choice Contingent Valuation (see, e.g. Champ et al., 1997 using a ten-point scale, Johannesson et al., 1998 using a dichotomous choice) is effective in mitigating hypothetical bias. Therefore, following the six choice sets we ask participants for each of the six choices "how likely is it that you would reduce your Lifetime Guaranteed Income by $X to receive an additional $Y (the reported amount) in your Flexible Account?" and in the WTA frame "how likely is it that you would use $X from your Flexible Account to buy an additional Guaranteed Lifetime Income of $Y (the reported amount)?" The responses are collected on a Likert scale with values between 0 and 10. Each of the six questions starts with "Suppose you have $A in your Flexible Account and a Lifetime Guaranteed income of $B". To prevent cognitive exhaustion, all six questions are displayed on one screen, in the non-randomized order described in Section 2.3.5.

[8]This is not found in all studies, for example, Carson et al. (1996) suggest that values from hypothetical choice and revealed preference studies match fairly well.

2.4 Covariates

After completing the experimental task, participants are asked questions about planning and their personality traits, pension arrangements and financial competence, and demographics and personal characteristics. These variables are collected for two purposes. First, we are interested in whether they could explain any heterogeneity of participant's valuation of the Lifetime Guaranteed Income product (that is, the annuity). Second, once we correct for the main heterogeneity in the collected variables, the remaining country differences in valuation of the Lifetime Guaranteed Income product would be due to differences in social norms and institutional settings between the Netherlands and Australia.

Financial capabilities

We collect three variables related to financial capabilities. First, the variable *SA fin lit* is a self-assessed financial literacy measure elicited using a Likert scale from 1 to 7 where 1 means a "very low" and 7 means a "very high" understanding of finance. Second, the variable *Fin lit* is the number of correct answers to the three standard financial literacy questions from Lusardi and Mitchell (2011), while the variable *Numeracy* is the number of correct answers to the three numeracy questions from Lipkus et al. (2001).

Retirement income replacement rate

Three variables are collected to measure household wealth. First, the variable *Household Income* is a categorical variable representing the four categories of income, see Table 2. Second, the variable *Homeowner* is an indicator variable for whether the participant is a homeowner or not. Being homeowner can been seen as providing an income from the imputed rent. Third, the variable *Wealth*, which is household wealth excluding owner-occupied housing wealth and retirement savings. This is a categorical variable with four outcomes: less than \$0 in Australia (less than €0 in the Netherlands), between \$0 and \$34,999 (between €0 and €19,999), between \$35,000 and \$104,999 (between €20,000 and €59,999) and more than \$105,000 (more than €60,000).

Health & life expectancy

We collect three variables related to the health and longevity of the participant. First, *Health* is an indicator variable which equals one if the self-assessed health is either "very good" or "excellent" and zero if "poor", "moderate" or "good". Second, the variable *SLE-OLE* is the difference in years between the participant's subjective life expectancy elicited in the survey and the objective life expectancy (from either the Australian Bureau of Statistics or Statistics Netherlands). The objective life expectancy includes further forecast improvements in life expectancy and is provided to participants as part of the subjective

life expectancy question. Third, the variable *Outlive partner* is elicited using a Likert scale from 0 to 10 for the question "how likely do you think you will outlive your spouse or partner", where "0" is very unlikely and "10" is very likely.

Saving & planning

We include six variables designed to measure savings habits and financial planning. The first variable is *Savings habit* which is the average of twelve questions from Loibl et al. (2011) answered using a Likert scale from 1 to 7. The second variable is *Spending horizon* which is an indicator variable which equals one if the most important time horizon for planning expenditures and savings is not more than the next couple of months and zero otherwise. The third variable is *Future time* which is the average of six questions from Jacobs-Lawson and Hershey (2005) answered using a Likert scale from 1 to 7 where a higher number indicates that the participant is more forward looking. The fourth variable is *Fin plan* which is an indicator variable for whether the participant has ever tried to work out how much they need to save for retirement. The fifth variable is *SA planning knowledge* which is the average of six questions related to retirement planning from Jacobs-Lawson and Hershey (2005). The sixth variable is *SA retirement distance* which is a variable measuring whether retirement will occur for the participant in the near future or in the distant future, with answers on a Likert scale from 1 to 7.

Personality traits

We include three covariates relating to psychological personality traits. In the survey we collect the ten item TIPI questions from Gosling et al. (2003), providing us the big 5 personality traits. In addition, we collect the conscientiousness measure used in Agnew et al. (2013) and Agnew et al. (2016). The covariates are then standardized.[9]

We combine the standardized conscientiousness measure from Gosling et al. (2003) and Agnew et al. (2013) and construct the covariate *Conscientiousness* which equals one if the participant has a higher than the median score on this measure. We construct the *Extrovert/Open* covariate which equals one if the participant scores higher than the median on the combined standardized extroversion and standardized openness to new ideas measure from Gosling et al. (2003). We construct the *Agreeable/Emotional* covariate which equals one if the participant scores higher than the median on the combined standardized agreeable and standardized emotional measure from Gosling et al. (2003).

We also include two variables for the economic utility parameters. First, the variable *Risk* is derived

[9]We also collected the impulsiveness measure used in Tsukayama et al. (2012). To reduce the number of covariates, we performed a factor analysis on the seven variables, which signals that there are 3 factors. We therefore construct three covariates, where each of the constructed covariates are constructed by selecting the standardized personality measures with the two highest (in absolute values) factor loadings.

from the Dohman et al. (2011) question "How do you see yourself: Are you generally a person who is fully prepared to take risks in financial matters or do you try to avoid taking risks in financial matters?". The question is answered using a Likert scale from 0 (not prepared to take risks) to 10 (fully prepared to take risks). Second, the variable *Patience* is elicited using a question from Becker et al. (2012) asking "How do you see yourself: Are you generally an impatient person or someone who always shows great patience?". The question is answered using a Likert scale from 0 (very impatient) to 10 (very patient).

Demographic characteristics

We collect several personal characteristics variables as follows. The variable *Age* is the age of the participant in years. The variable *Female* is an indicator variable for whether the participant is female or not, the variable *Single* is an indicator variable of whether the participant is single or not, and the variable *Children* is an indicator variable of whether the participant has children or not. The variable *Bachelor's degree* is an indicator variable which equals one if the respondent had at least a bachelor degree and zero otherwise. The variable *In labor force* is an indicator variable for whether the participant is working -either part-time or full-time- and the variable *Self-employed* is an indicator of whether the participant is self-employed or not.

Representativeness of the sample

Table 8 compares the country sub-samples with population characteristics from Statistics Netherlands and the Australian Bureau of Statistics Census data. Apart from being slightly more often in the labor force and slightly more educated than the population, the sample is representative. This is due to the constraint in the experimental survey that at least one member of the household should be in the labor force in order to be eligible to participate in the experimental survey.

Table 8: Representativeness of the sample

	Population		Sample	
	NL	AU	NL	AU
Female	49.93%	51.13%	44.97%	50.00%
Single	33.92%	29.48%	31.80%	31.10%
Bachelor's degree	31.07%	29.03%	40.28%	33.50%
In labor force	68.19%	73.11%	75.45%	77.60%
Self-employed	17.11%	14.05%	13.06%	14.00%

This table displays the representativeness of the sample for the main personal characteristics. Columns (1) and (2) are population fractions. These population fractions are based on national representative figures from statistics Netherlands and the 2016 Australian Census for 50-65 year old. Columns (3) and (4) are the experimental survey sample fractions.

3 Results - perceived product features

The attractiveness of the Lifetime Guaranteed Income product and the Flexible Account product should be mainly driven by whether the participant values the guarantees in the former or the freedom of choice in the latter. Moreover, if the participant perceives that he does not understand the product features he would be less inclined to prefer that product. Therefore, in this section we investigate what explains participants perception of the products. As described in Section 2.3.3, we ask each participant three questions for both products to elicit their perceived understanding of the product, their perception of the riskiness of the product and the control they perceive to have with the product.

The descriptive statistics reported in Table 7 show that there is some dispersity in the relative difference in perceived product features. To understand the effect the covariates have on the attractiveness of the Lifetime Guaranteed Income product (relative to the Flexible Account product) we first investigate their effect on the perceived product features. For each of the three product features we perform a linear regression on the difference between the reported values of the Likert scale of the two products. The parameter estimates are presented in Table 9, with regressions on the whole sample (columns (3), (6), and (9)) and on the Dutch (columns (1), (4), and (7)) and Australian (columns (2), (5), and (8)) subsamples separately. The latter is to observe whether institutional settings and social norms -which are country specific- might affect the association of the covariates with the perceived product feature.

In the regression we also include covariates specific to our experimental design. The covariate *Quiz mistakes* is an indicator variable which equals one if the participant made at least three mistakes in the product knowledge quiz. The covariate *Short time* is an indicator variable which equals one if the participant was among the 10% of participants who spent the least time on the survey. At the end of the survey we asked, "How clear do you think the questions in this survey are". If the participant reported either "Sometimes clear", "mostly confusing" or "completely confusing" our indicator variable *Confusing* equals one and zero otherwise.

To investigate the effect of an participant's engagement with the experimental survey, we define a participant as having a low engagement when either the indicator *Quiz mistakes* or the indicator *Short time* is equal to one. We interact this low engagement indicator with various covariates, which is represented by the variable name ending with LOW.[10]

The covariate *Consumption framing* is an indicator variable which equals one for the information

[10]The indicator LOW is a linear combination of the variables *Quiz mistakes*, *Short time* and *Short time x Quiz mistakes*. Therefore, our specification includes the main effects of the variables with interaction effects.

Table 9: Regression estimates for product characteristics regressions

	Understanding			Riskiness			Control		
	NL	AU	sample	NL	AU	sample	NL	AU	sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Institutional settings									
Australian			−0.174 * **			−0.621 * **			−1.921 * **
			(−2.97)			(−3.37)			(−8.79)
Australian LOW			−0.160			0.738 * *			1.502 * **
			(−1.09)			(2.51)			(5.01)
Information framing									
Gain framing	0.153 * *	−0.0272	0.0649	0.603 * **	0.0219	0.322 * *	−0.531*	0.0573	−0.188
	(2.10)	(−0.41)	(1.31)	(2.69)	(0.10)	(2.02)	(−1.75)	(0.23)	(−0.95)
Consumption framing	−0.0501	0.0335	0.0000306	−0.536 * *	0.0153	−0.252	0.501	0.0421	0.267
	(−0.68)	(0.53)	(0.00)	(−2.37)	(0.07)	(−1.57)	(1.63)	(0.17)	(1.35)
Gain framing LOW	−0.685 * **	0.0996	−0.296 * *	−0.417	−0.0119	−0.216	0.347	−0.347	−0.0618
	(−2.98)	(0.62)	(−2.13)	(−0.94)	(−0.03)	(−0.78)	(0.79)	(−0.91)	(−0.21)
Consumption framing LOW	0.325	−0.123	0.0995	−0.0945	−0.0742	−0.0137	−0.464	−0.131	−0.348
	(1.34)	(−0.76)	(0.69)	(−0.22)	(−0.20)	(−0.05)	(−1.06)	(−0.34)	(−1.21)
Financial capabilities									
SA fin lit	−0.00703	−0.0796 * *	−0.0455*	−0.0791	−0.130	−0.115	0.0395	0.163	0.0920
	(−0.17)	(−2.32)	(−1.69)	(−0.65)	(−1.09)	(−1.37)	(0.24)	(1.24)	(0.91)
Fin lit	−0.0335	−0.0203	−0.0336	0.687 * **	0.435 * **	0.561 * **	−0.398*	−0.604 * **	−0.497 * **
	(−0.53)	(−0.43)	(−0.85)	(4.38)	(2.65)	(4.97)	(−1.82)	(−3.31)	(−3.49)
Numeracy	−0.0561	0.0137	−0.0183	0.345 * **	0.401 * **	0.385 * **	−0.644 * **	−0.499 * **	−0.554 * **
	(−1.19)	(0.40)	(−0.62)	(2.64)	(3.21)	(4.27)	(−3.98)	(−3.68)	(−5.20)
SA fin lit LOW	−0.0410	0.0468	0.00446	0.291*	0.273*	0.258 * *	−0.280	−0.147	−0.270 * *
	(−0.47)	(0.91)	(0.09)	(1.66)	(1.91)	(2.35)	(−1.49)	(−1.00)	(−2.34)
Fin lit LOW	0.138	0.0238	0.0971	−0.429*	−0.204	−0.309*	0.728 * **	0.197	0.468 * *
	(1.13)	(0.25)	(1.27)	(−1.74)	(−0.83)	(−1.79)	(2.71)	(0.77)	(2.55)
Numeracy LOW	0.147	−0.0353	0.0319	−0.0747	0.0227	−0.0245	0.303	0.487 * *	0.374 * *
	(1.27)	(−0.39)	(0.43)	(−0.30)	(0.10)	(−0.14)	(1.26)	(2.10)	(2.22)
Experimental design									
Quiz mistakes	0.179	−0.126	0.0947	−1.613*	−2.046 * **	−2.149 * **	0.170	2.083 * **	0.630
	(0.37)	(−0.43)	(0.32)	(−1.75)	(−2.73)	(−3.57)	(0.16)	(2.65)	(0.95)
Short time	−0.0475	−0.500	−0.257	−1.761*	−1.880 * *	−2.150 * **	0.327	1.434*	0.358
	(−0.10)	(−1.55)	(−0.84)	(−1.81)	(−2.44)	(−3.25)	(0.31)	(1.75)	(0.52)
Short time x Quiz mistakes	−0.215	0.445	0.0962	1.051	1.933 * *	1.857 * **	−0.167	−1.275	−0.264
	(−0.40)	(1.18)	(0.28)	(0.97)	(2.41)	(2.66)	(−0.15)	(−1.56)	(−0.37)
Confusing	0.0747	0.0189	0.0341	−0.425	−0.168	−0.310*	0.0554	0.793 * **	0.488 * *
	(0.63)	(0.19)	(0.44)	(−1.59)	(−0.71)	(−1.76)	(0.18)	(2.86)	(2.37)
Retirement income replacement rate									
Household income	0.0359	0.0486	0.0628 * *	0.454 * **	0.167	0.309 * **	0.317*	−0.137	0.0223
	(0.78)	(1.19)	(2.01)	(3.07)	(1.59)	(3.67)	(1.77)	(−1.18)	(0.23)
Homeowner	−0.0746	−0.216 * *	−0.133*	0.430*	−0.0798	0.236	−0.403	0.221	0.0112
	(−0.69)	(−2.34)	(−1.89)	(1.78)	(−0.31)	(1.35)	(−1.29)	(0.78)	(0.05)
Wealth	0.0302	−0.00224	0.00500	−0.234*	−0.209*	−0.219 * **	0.131	0.0494	0.108
	(0.63)	(−0.07)	(0.19)	(−1.80)	(−1.89)	(−2.63)	(0.74)	(0.42)	(1.09)
Health & life expectancy									
Health	0.197*	0.153*	0.154 * *	−0.0982	0.0378	−0.0630	−0.0577	−0.222	−0.185
	(1.83)	(1.71)	(2.31)	(−0.37)	(0.17)	(−0.37)	(−0.17)	(−0.89)	(−0.89)
SLE-OLE	−0.00129	−0.00270	−0.00217	0.0199	0.0118	0.0166 * *	−0.0167	−0.0113	−0.0156*
	(−0.30)	(−0.67)	(−0.75)	(1.59)	(1.07)	(2.01)	(−1.17)	(−0.92)	(−1.68)
Outlive partner	0.0132	−0.00229	0.00265	−0.00633	−0.0421	−0.0266	0.0933	0.0770	0.0911 * *
	(0.81)	(−0.17)	(0.26)	(−0.12)	(−0.94)	(−0.78)	(1.47)	(1.61)	(2.35)
Saving & planning									
Savings habit	−0.0227	−0.0287	−0.0282*	−0.0774	−0.0201	−0.0622	0.0221	−0.0772	−0.0343
	(−0.89)	(−1.32)	(−1.68)	(−0.98)	(−0.26)	(−1.14)	(0.22)	(−0.83)	(−0.51)
Spending horizon	−0.0842	−0.0308	−0.0603	−0.143	0.382*	0.178	−0.450	−0.0612	−0.151
	(−0.93)	(−0.51)	(−1.14)	(−0.53)	(1.77)	(1.06)	(−1.39)	(−0.26)	(−0.79)
Future time	0.0288	0.0511	0.0351	0.00333	−0.0433	−0.0231	0.0470	−0.0734	−0.0196
	(0.61)	(1.38)	(1.15)	(0.03)	(−0.36)	(−0.28)	(0.30)	(−0.57)	(−0.20)
Fin plan	−0.0897	−0.0310	−0.0842	−0.183	−0.170	−0.221	0.497*	−0.120	0.127
	(−1.05)	(−0.37)	(−1.43)	(−0.85)	(−0.74)	(−1.42)	(1.76)	(−0.46)	(0.67)
SA planning knowledge	0.0401	0.0790 * *	0.0630 * *	0.0817	0.00738	0.0696	−0.00431	−0.110	−0.0300
	(1.03)	(1.97)	(2.22)	(0.84)	(0.07)	(0.96)	(−0.03)	(−0.90)	(−0.34)
SA retirement distant	−0.0192	0.000673	−0.00875	0.00828	0.00331	0.0116	−0.0237	0.0417	0.0301
	(−0.78)	(0.03)	(−0.52)	(0.12)	(0.05)	(0.25)	(−0.27)	(0.57)	(0.54)
Personality Traits									
Conscientiousness	0.0578	−0.133 * *	−0.0412	0.430 * *	−0.0827	0.188	0.106	−0.322	−0.114
	(0.72)	(−2.00)	(−0.79)	(2.04)	(−0.39)	(1.27)	(0.38)	(−1.39)	(−0.63)
Extrovert/Open	0.0400	−0.0257	0.0157	0.193	0.169	0.191	0.0782	0.176	0.132
	(0.51)	(−0.40)	(0.31)	(0.93)	(0.85)	(1.34)	(0.29)	(0.79)	(0.76)
Agreeable/Emotional	−0.0144	0.00876	0.00758	0.252	0.486 * *	0.394 * **	−0.464*	−0.0444	−0.252
	(−0.19)	(0.13)	(0.15)	(1.20)	(2.15)	(2.59)	(−1.71)	(−0.18)	(−1.40)
Risk	−0.0440 * *	−0.0404 * *	−0.0415 * **	−0.185 * **	−0.0768	−0.131 * **	−0.0976	−0.0558	−0.0856 * *
	(−2.08)	(−2.46)	(−3.09)	(−3.96)	(−1.61)	(−4.05)	(−1.62)	(−1.11)	(−2.23)
Patience	0.0150	−0.00861	0.00204	0.0199	0.0172	0.0143	−0.0544	0.0205	−0.0137
	(0.96)	(−0.53)	(0.18)	(0.38)	(0.35)	(0.40)	(−0.82)	(0.40)	(−0.33)
Demographic									
Age	0.0138	−0.0118	0.00144	0.0221	−0.0197	0.00184	0.00714	0.00741	0.00618
	(1.28)	(−1.56)	(0.22)	(0.81)	(−0.79)	(0.10)	(0.21)	(0.26)	(0.29)
Female	−0.0979	−0.158 * *	−0.124 * *	0.250	0.146	0.214	−0.148	−0.414*	−0.307
	(−1.00)	(−2.09)	(−2.03)	(1.01)	(0.67)	(1.33)	(−0.49)	(−1.74)	(−1.63)
Single	0.206	0.0814	0.124	0.509	−0.00618	0.224	−0.0548	0.235	0.120
	(1.59)	(0.67)	(1.43)	(1.41)	(−0.02)	(0.90)	(−0.12)	(0.66)	(0.41)
Children	−0.0409	−0.0657	−0.0900*	−0.134	−0.0720	−0.173	−0.0945	−0.255	−0.180
	(−0.53)	(−0.88)	(−1.68)	(−0.62)	(−0.31)	(−1.12)	(−0.34)	(−1.05)	(−0.99)
Bachelor's degree	0.0815	−0.0550	0.00678	0.443 * *	0.404*	0.406 * **	−0.713 * *	−0.197	−0.449 * *
	(1.05)	(−0.82)	(0.14)	(2.01)	(1.83)	(2.67)	(−2.39)	(−0.82)	(−2.35)
In labor force	−0.205*	−0.0665	−0.133*	−0.428*	0.0811	−0.151	0.282	−0.0913	0.102
	(−1.96)	(−0.69)	(−1.86)	(−1.68)	(0.32)	(−0.84)	(0.87)	(−0.32)	(0.47)
Self-employed	−0.0949	0.0649	−0.0291	0.428	0.231	0.280	−0.223	−0.00804	−0.137
	(−0.79)	(0.78)	(−0.42)	(1.37)	(0.79)	(1.33)	(−0.52)	(−0.03)	(−0.52)
Constant	−0.342	1.298 * **	0.590	−0.352	2.864*	1.529	0.210	−0.497	0.709
	(−0.45)	(2.63)	(1.36)	(−0.20)	(1.70)	(1.27)	(0.09)	(−0.26)	(0.49)
N	1,003	1,000	2,003	1,003	1,000	2,003	1,003	1,000	2,003

Dependent variable for (1)-(3): Likert scale of understanding LGI product less FA product.
Dependent variable for (4)-(6): Likert scale of riskiness FA product less LGI product.
Dependent variable for (7)-(9): Likert scale of control LGI product less FA product.
t statistics in parentheses; * p< 0.10, ** p< 0.05, *** p< 0.01

framing treatments *Consumption Gain* and *Consumption Loss* (see Table 3 for the description of the frames), while the covariate *Gain framing* is an indicator variable which equals one for the information framing treatments *Consumption Gain* and *Investment Gain*.

We now discuss regression results distinguishing between behavioral influences (information framing, institutional settings and financial capabilities), those influences informed by economic theory, and other factors.

3.1 Perceived product features: main behavioral factors

Institutional settings

Importantly, the institutional design of the retirement income system remains an influence in the perception of the products. Participants perceive as more favourable the product with which they are familiar from their real world retirement benefit arrangements. That Dutch participants are less familiar with drawdown products and more familiar with annuity products, while Australian participants are less familiar with annuity products and more familiar with drawdown products, shows up as significant parameter *Australian* in the regression.

However, for participants who were less engaged with the experimental task, the institutional effects on the perceived riskiness and control of the products are small.[11] We intentionally did not use familiar product names (annuity for the Dutch or account-based pension for Australians) in the experimental task to address participants attributing features and perceptions from their real world experience with similar products. As a result, the participants with low engagement have likely been less able to link the experimental product features to the real world retirement income system and therefore the institutional setting had little effect for the less engaged participants.

Information framing

As all the information frames are designed to present the same information, the information framing covariates are expected to have no effect.[12] Indeed, for the Australian subsample (columns (2), (5) and (8)) we do not observe any significant effect of these covariates on the difference in understanding of the two products. However, for the Dutch subsample (columns (1), (4) and (7)) we find that information framing does play a role, but the role depends on whether the participant is engaged with the experimental task or not. Where the Dutch participant is engaged, the loss frame will lead to better understanding

[11] The effect of less engaged Australians compared to less engaged Dutch participants is the sum of the parameter estimates of the main effect (*Australian*) and interaction effect (*Australian LOW*).

[12] Although, as noted earlier, the framing literature is mixed in the retirement benefits context.

of the product they are not familiar with -the Flexible Account product- as the higher cost of loss will enhance their effort. As a result, they are more aware that the Flexible Account product is more risky, but provides greater control for unexpected expenses in the near future than the Guaranteed Lifetime Income product. For the less engaged participant, however, the information in the loss frame is harder to understand than in the gain frame and the participant is less likely to spend the effort to learn about it. As a result, the less engaged Dutch participant learns less from the loss frame presentation and is therefore more likely to understand the Lifetime Guaranteed Income product than the Flexible Account product in this frame. As a consequence of limited information acquisition by the less engaged participants, the effect of gain versus loss framing is limited for those participants.

For a Dutch participant, the consumption frame as opposed to the investment frame, leads to a higher perceived riskiness of the Lifetime Guaranteed Income product compared to the Flexible Account product. This is likely because the consumption frame also highlights consumption in the event of unexpected expenditures, which would require precautionary savings.

Financial capabilities

The parameter estimates *SA fin lit* in the Australian subsample suggest that Australians who might think they know enough and have therefore not spent enough time learning about the Lifetime Guaranteed Income product have less understanding of the unfamiliar product. This effect is only present in the Australian subsample. Participants with high self-reported financial literacy are more likely to consider themselves capable of understanding products which are influenced by financial markets.

Participants who are better able to understand the guarantee features of the Guaranteed Lifetime Income product are more likely to find the product less risky. We observe that engaged participants who perform better in the financial literacy and numeracy questions perceive the Lifetime Guaranteed Income product to be less risky, but that means less control of their spending.[13] For the less engaged participants, this effect is not present as their limited engagement with the experimental survey has limited their ability to fully understand the guarantee features of the Guaranteed Lifetime Income product. Therefore, the parameter estimates of the variables *Fin lit LOW* and *Numeracy LOW* are of similar magnitude, but of the opposite sign to the variables *Fin lit* and *Numeracy*.

[13]Note that another way to interpret the results is that those who are less able to understand the products are more likely to provide similar answers to the product features of the Lifetime Guaranteed Income product and the Flexible Account product.

3.2 Perceived product features: main rational (economic) factors

Retirement income replacement rate

Participants who would require a higher income replacement rate from their retirement savings -given pre-annuitized state pension wealth- do perceive the Lifetime Guaranteed Income product as more favourable relative to the Flexible Account product than participants who already have substantial income replacement given the existing state pension income. Hence, the variable *Household income* tends to be positive, whereas the variable *Homeowner* tends to be negative, as owning a home provides an imputed income equal to the rental costs of the home.

Participants who have more wealth see the Flexible Account product relative to the Lifetime Guaranteed Income product as less risky than those who have less wealth. As wealthier participants are more likely to have benefited from investment returns, this result might be driven by a selection effect. Participants who view the stock market as less risky have invested in it and have accumulated larger wealth, whereas participants who view the stock market as risky would not have invested in it and have experienced lower financial returns. Naturally the former group would consider the exposure to the stock market in the Flexible Account product as less risky than the latter group.

Health and life expectancy: the money's worth

Participants who are in good *Health* could expect to live long and have a higher need for income products and therefore know more about the Lifetime Guaranteed Income product. The longer the participant expects to live (higher value of *SLE-OLE*), the more risk he faces of running out of money before passing away. Therefore he would find the Lifetime Guaranteed Income product less risky compared to the Flexible Account product than those who expect to pass away soon. Given the joint and last survivor feature of the Lifetime Guaranteed Income product, having a higher probability of outliving your partner enhances the control of the product as it implies that the last survivor still receives an income.[14] However, as the income is reduced after the death of one member of the household, expecting to live longer reduces the perception of control for the Lifetime Guaranteed Income product.

3.3 Perceived product features: other factors

Many of the parameter estimates related to personal characteristics, both the variables related to saving & planning and personality traits, are not significant for the perception of the products at a 5% significance

[14]This is particularly the case as it is a decision for the household retirement wealth of both partners. Whereas females are more likely to be the last survivors, they typically have less personal retirement wealth than their partner.

level.

Those who have thought more about financing retirement -in Australia through a higher score on *SA planning knowledge*- have greater understanding of the Lifetime Guaranteed Income product, likely because they would be more familiar with the state pension, which has similar features to the Lifetime Guaranteed Income product in our experiment.

Relatedly, Australians with a higher score for conscientiousness have a higher perceived understanding of the Flexible Account product, as one would expect that they have made effort in the real world to understand the product most associated with Australia's institutional framework. However, the Dutch with a higher score for conscientiousness, perceive the Flexible Account product relative to the Lifetime Guaranteed Income product as more risky, possibly because they are not familiar with the Flexible Account product. In addition, participants (particularly the Australian sub-sample) who score high for the psychological trait *Agreeable/Emotional* perceive the Lifetime Guaranteed Income product as less risky. This is not surprising as one would expect that they prefer the guarantee features of this product relative to the uncertainty associated with a Flexible Account product.

Finally, the negative parameter estimates of *Risk* indicates that participants who are more willing to take financial risk perceive the product features of the Flexible Account as more favourable compared to the Lifetime Guaranteed Income product than participants less willing to take financial risks.

Many of the parameter estimates related to demographics are not significant for the perception of the products at a 5% significance level. An exception is the covariate *Female*, which is negative and significant possibly indicating that women in this age cohort (50-64) have thought less about how to finance retirement due to modest account balances or pension rights.[15]

In line with the findings for financial capabilities, being better able to understand the product features does not have a significant influence on the perceived understanding of the Lifetime Guaranteed Income product relative to the Flexible Account product. This finding holds for financial capabilities (variables *Fin Lit* and *Numeracy*), level of education of the participant (variable *Bachelor's degree*) and effort (variables *Quiz mistakes* and *Short time*).[16]

Similarly consistent is the result that better understanding of product features leads to perception that the Flexible Account product is more risky, but provides less control relative to the Lifetime Guaranteed

[15]For example, in Australia the median pension account balance for a women aged 60-64 is A$36,000 (ASFA, 2017).

[16]Note that the opposite sign but of smaller magnitude of the interaction term *Short time x Quiz mistakes* than its main effects implies that the effect of participants who had three or more mistakes in the product knowledge quiz and were within the 10% fastest completions of the experimental survey is larger than the effect of participants where only one of those two conditions held, but that the effect is not additive.

Income product. This indicates that those who better understand the product features indeed are more likely to perceive the insurance feature against outliving one's wealth of the Lifetime Guaranteed Income product at the expense of giving up some flexibility.[17]

4 Results - valuing annuities relative to drawdown products

In this section we analyze the drivers that explain the heterogeneity in valuing annuities (our Lifetime Guaranteed Income product) relative to drawdown products (our Flexible Account product). As discussed earlier we collected data on 2,003 participants who provided answers to the six within-subject treatments (that is the six iMPL tasks which differ by their benchmark portfolio of retirement benefit allocations for Option A and Option B).

Table 10 displays the average of the logged money's worth ratio as displayed in Table 7 for various subsamples. The averages (times 100%) can therefore be interpreted as the required percentage increase in the price needed for the participant to be willing to purchase the Lifetime Guaranteed Income product.

[17] Again, note that another way to interpret these results is that those who are less able to understand the products are more likely to provide similar answers to the product features of the Lifetime Guaranteed Income product and the Flexible Account product.

Table 10: Summary statistics for key results

	Full	Sample		LOW engagement		Engaged	
	sample	1st	2nd	1st	2nd	1st	2nd
AU vs NL	-0.003	-0.017*	0.011	0.031	-0.021	-0.029***	0.019*
	(0.006)	(0.009)	(0.009)	(0.021)	(0.021)	(0.010)	(0.010)
Female vs male	-0.003	-0.020**	0.013	-0.015	0.021	-0.021**	0.010
	(0.006)	(0.010)	(0.009)	(0.023)	(0.019)	(0.010)	(0.010)
Single vs couple	-0.003	0.086***	-0.044***	0.065**	-0.026	0.092***	-0.048***
	(0.006)	(0.012)	(0.008)	(0.026)	(0.018)	(0.013)	(0.008)
WTP vs WTA	-0.003	-0.088***	0.082***	-0.144***	0.163***	-0.074***	0.063***
	(0.006)	(0.009)	(0.009)	(0.020)	(0.021)	(0.010)	(0.010)
Gain vs Loss	-0.003	0.013	-0.019**	0.071***	-0.056***	-0.000	-0.010
frame	(0.006)	(0.009)	(0.009)	(0.021)	(0.020)	(0.010)	(0.010)
Cons vs Invest	-0.003	0.004	-0.010	-0.021	0.028	0.010	-0.021**
frame	(0.006)	(0.009)	(0.009)	(0.022)	(0.020)	(0.010)	(0.010)
Confused vs not	-0.003	-0.087***	0.013*	-0.033	0.018	-0.111***	0.012
	(0.006)	(0.016)	(0.007)	(0.030)	(0.017)	(0.019)	(0.008)
Observations	12,018	12,018		2,394		9,624	

Notes: This table displays the average of the logged money's worth of annuities for various subpopulations. In the even columns (1th) the subpopulation has the first characteristic of the row (e.g. Australians, Females), whereas the odd columns (2nd) the subpopulation has the second characteristic of the row (e.g. Netherlands, Male).
The first three columns the averages are taken for the specific subpopulation of the whole sample, in the next two columns only of the sample with LOW engagement, and in the last two columns of the sample without the participants with LOW engagement.
Standard errors in parentheses; * p< 0.10, ** p< 0.05, *** p< 0.01.

Whereas on average the willingness to pay aligns with the actuarial fair price of the annuity, this result varies by subpopulation. Not controlling for other characteristics, Australians, females and couples on average have a higher willingness to pay for annuities (i.e., they would purchase the annuity at a lower price).[18] The effect is larger for the engaged participants than for the participants with low engagement. When participants are asked at which price they want to give up income to receive a lump sum the annuity price is higher than when participants are asked at which price they would purchase income. This effect is mitigated by information provision as the effect for the engaged subsample is much smaller than for the subsample with low engagement. Provision of specific information in addition to the general framed information also mitigates the influence of framing for the engaged participants.[19] Participants who respond that the survey was *sometimes clear* up to *completely confusing* indicate they would purchase an

[18]For females this is as expected as we used gender neutral annuity prices, making annuities more favourable for females due to longer life expectancy. For couples this is as expected as we used for pricing that the spouse was on average three years younger than the participant, which leads to a relatively high price for the benefits for the surviving spouse.

[19]We do observe a significant negative effect for the investment frame. However, this is due lower clarity of the investment frame than the consumption frame. When omitting the participants who indicated the survey was not clear to them, the effect of investment framing for engaged participants was 0.0004 and for consumption framing 0.0236.

annuity at a lower price, which suggests that they understand the Guaranteed Lifetime Income product (due to its similarities with the state pension).

Table 11 reports the parameter estimates of a panel data model with random effects. The dependent variable is the logged money's worth ratio as displayed in Table 7. The first three columns of Table 11 display the estimation results with all covariates. The first column reports the estimation results of all six liquidity treatments for the Dutch sub-sample, the second column for the Australian sub-sample and the third column for the whole sample. Columns (4) to (9) report the estimation results of each of the six iMPL tasks separately, for the whole sample (Dutch and Australian combined).

As a robustness check, in Table 12 in the appendix we exclude the three covariates related to the perception of the products, which were analyzed in the previous section. We perform this robustness check as these covariates might be confounding variables, affecting both our dependent variable as well as the perception of the product. Controlling for this confounder effect might alter the parameter estimates of the other covariates as it excludes the effect the covariates have through the product perception on the dependent variable. However, we observe that our results are robust to excluding the perception of the products covariates.

In the regressions we also include the following experimental covariates. The variable *WTP treatment* is an indicator variable which equals one if the participant was in the WTP treatment and zero if he was in the WTA treatment. The variable *Duration* represents the logged duration (in minutes) taken to complete the iMPL task (this attribute varies per treatment). The variable *Order* takes values in the range of one to six, which represents the order in which a given iMPL within-subject treatment was shown to the participant, given that the order of the treatments is randomized by participant. The variable *Likelihood to reduce* represents the per within-subject treatment and WTP-WTA treatment standardized response to the question described in Section 2.3.6. The dummy variables *(1-2/3)*,...,*(1/3-0)* represent the iMPL within-subject treatments. The variable *SEx(1/3-0)* represents the interaction variable between self-employed and treatment 6 (an allocation of 1/3 vs 0 of retirement savings to the Lifetime Guaranteed Income product), i.e. an indicator variable which equals one if the participant is self-employed and answers treatment six. The variable *AUx(1-2/3)* represents the interaction variable between an Australian participant and treatment 1 (an allocation of 1 vs 2/3 of the retirement savings to the Lifetime Guaranteed Income product), i.e. an indicator variable which equals one if the participant is Australian and has been presented with iMPL within-subject treatment 1.

Next we discuss regression results for annuity valuation distinguishing between behavioral influences

Table 11: Money's worth ratio regressions table

	NL (1)	AU (2)	sample (3)	1-2/3 (4)	1-1/3 (5)	1-0 (6)	2/3-1/3 (7)	2/3-0 (8)	1/3-0 (9)
Institutional settings									
Australian			−0.0116	−0.0775∗	0.0239	−0.0198	−0.00612	−0.0185	−0.0246
			(−0.34)	(−1.80)	(0.58)	(−0.48)	(−0.15)	(−0.45)	(−0.57)
Australian LOW			0.128 ∗ ∗	0.158 ∗ ∗	0.102	0.104	0.136∗	0.0891	0.176 ∗ ∗
			(2.03)	(1.99)	(1.33)	(1.36)	(1.78)	(1.16)	(2.25)
Endowment effect									
WTP treatment	−0.146 ∗ ∗∗	−0.140 ∗ ∗∗	−0.132 ∗ ∗∗	−0.110 ∗ ∗∗	−0.128 ∗ ∗∗	−0.150 ∗ ∗∗	−0.124 ∗ ∗∗	−0.124 ∗ ∗∗	−0.152 ∗ ∗∗
	(−3.80)	(−3.39)	(−4.68)	(−3.04)	(−3.79)	(−4.38)	(−3.53)	(−3.62)	(−4.29)
WTP treatment LOW	−0.106	−0.246 ∗ ∗∗	−0.197 ∗ ∗∗	−0.240 ∗ ∗∗	−0.172 ∗ ∗	−0.164 ∗ ∗	−0.212 ∗ ∗∗	−0.207 ∗ ∗∗	−0.190 ∗ ∗
	(−1.18)	(−2.79)	(−3.17)	(−3.11)	(−2.31)	(−2.19)	(−2.82)	(−2.75)	(−2.46)
Information framing									
Gain framing	0.0345	−0.0218	0.00760	−0.0152	0.0180	0.0158	−0.00381	0.0298	0.00948
	(0.90)	(−0.53)	(0.27)	(−0.42)	(0.53)	(0.46)	(−0.11)	(0.87)	(0.27)
Consumption framing	0.0108	0.0143	0.0141	0.00857	−0.0114	0.0274	0.00516	0.0469	0.00325
	(0.28)	(0.35)	(0.50)	(0.24)	(−0.34)	(0.80)	(0.15)	(1.37)	(0.09)
Gain framing LOW	0.100	0.0383	0.0892	0.141∗	0.0997	0.120	0.0657	0.0161	0.0873
	(1.06)	(0.43)	(1.40)	(1.77)	(1.29)	(1.58)	(0.87)	(0.21)	(1.12)
Consumption framing LOW	−0.0728	−0.0818	−0.0877	−0.0367	−0.0527	−0.117	−0.190 ∗ ∗	−0.0611	−0.0574
	(−0.78)	(−0.93)	(−1.38)	(−0.47)	(−0.69)	(−1.55)	(−2.50)	(−0.81)	(−0.73)
Financial capabilities									
SA fin lit	−0.0181	0.00112	−0.00760	0.00697	−0.00101	−0.0286	−0.00540	−0.0165	−0.00346
	(−0.92)	(0.05)	(−0.53)	(0.37)	(−0.06)	(−1.62)	(−0.30)	(−0.93)	(−0.19)
Fin lit	0.0337	0.0153	0.0257	0.0408	0.0611 ∗ ∗	0.00516	0.0136	0.0430	−0.00243
	(1.13)	(0.49)	(1.18)	(1.45)	(2.34)	(0.19)	(0.50)	(1.63)	(−0.09)
Numeracy	−0.0346	−0.00182	−0.0182	−0.0117	−0.0236	−0.00954	−0.0205	−0.0127	−0.0276
	(−1.62)	(−0.08)	(−1.16)	(−0.58)	(−1.26)	(−0.51)	(−1.04)	(−0.67)	(−1.41)
SA fin lit LOW	−0.0139	0.0657 ∗ ∗	0.0137	0.00312	−0.00390	0.0200	0.0151	0.0366	0.00855
	(−0.51)	(2.41)	(0.74)	(0.13)	(−0.17)	(0.88)	(0.65)	(1.64)	(0.37)
Fin lit LOW	−0.0885	−0.0377	−0.0647∗	−0.0661	−0.0776∗	−0.0655	−0.0740	−0.102 ∗ ∗	−0.0110
	(−1.63)	(−0.69)	(−1.68)	(−1.41)	(−1.67)	(−1.47)	(−1.58)	(−2.18)	(−0.23)
Numeracy LOW	0.123 ∗ ∗∗	−0.00668	0.0631∗	0.0573	0.0506	0.0563	0.0886 ∗ ∗	0.0515	0.0555
	(2.69)	(−0.13)	(1.84)	(1.35)	(1.22)	(1.40)	(2.12)	(1.22)	(1.29)
Experimental design									
Quiz mistakes	0.150	0.0682	0.0797	0.105	0.196 ∗ ∗	0.0250	0.122	0.0619	−0.0147
	(1.19)	(0.68)	(1.04)	(1.08)	(2.23)	(0.27)	(1.32)	(0.69)	(−0.16)
Short time	0.0768	−0.108	−0.0336	−0.0447	0.00640	−0.0381	0.00865	−0.0982	−0.0935
	(0.59)	(−1.08)	(−0.42)	(−0.45)	(0.07)	(−0.41)	(0.09)	(−1.04)	(−0.97)
Short time x Quiz mistakes	−0.161	0.0924	−0.00904	−0.0345	−0.148	0.0481	−0.0644	0.110	−0.0176
	(−1.11)	(0.69)	(−0.09)	(−0.30)	(−1.29)	(0.42)	(−0.54)	(0.94)	(−0.15)
Confusing	−0.103∗	−0.0941∗	−0.100 ∗ ∗∗	−0.0639	−0.121 ∗ ∗∗	−0.113 ∗ ∗	−0.0788∗	−0.103 ∗ ∗	−0.126 ∗ ∗∗
	(−1.91)	(−1.80)	(−2.70)	(−1.39)	(−2.68)	(−2.53)	(−1.78)	(−2.35)	(−2.83)
Duration	−0.00341	0.00184	−0.00167	−0.0193	−0.0352 ∗ ∗	−0.0274	−0.0189	−0.00623	−0.0176
	(−0.47)	(0.20)	(−0.30)	(−1.08)	(−2.05)	(−1.58)	(−1.18)	(−0.38)	(−1.21)
Order	−0.00659	0.00402	−0.00154	−0.00521	−0.0216 ∗ ∗	0.0157	−0.0237 ∗ ∗	−0.00603	−0.00752
	(−1.37)	(0.78)	(−0.44)	(−0.48)	(−2.01)	(1.55)	(−2.23)	(−0.58)	(−0.70)
Likelihood to act	−0.0415 ∗ ∗∗	0.00131	−0.0201 ∗ ∗	−0.0204	−0.00395	−0.0392 ∗ ∗	−0.0583 ∗ ∗∗	−0.0437 ∗ ∗∗	−0.0209
	(−3.18)	(0.10)	(−2.16)	(−1.16)	(−0.24)	(−2.37)	(−3.51)	(−2.62)	(−1.23)
Between-subject treatments: liquidity									
1-2/3	0	0	0						
	(.)	(.)	(.)						
1-1/3	−0.0262	0.0380 ∗ ∗	−0.0202						
	(−1.49)	(1.97)	(−1.20)						
1-0	−0.0155	0.0211	−0.0235						
	(−0.85)	(1.08)	(−1.38)						
2/3-1/3	−0.0152	0.0374∗	−0.0148						
	(−0.75)	(1.76)	(−0.81)						
2/3-0	−0.0191	0.0338	−0.0190						
	(−0.92)	(1.59)	(−1.03)						
1/3-0	−0.0456 ∗ ∗	0.00302	−0.0480 ∗ ∗						
	(−2.06)	(0.13)	(−2.46)						
SEx(1/3-0)	−0.0318	−0.0911∗	−0.0625∗						
	(−0.70)	(−1.93)	(−1.90)						
AUx(1-2/3)			−0.0499 ∗ ∗						
			(−2.18)						
Retirement income replacement rate									
Household income	0.0241	0.0485 ∗ ∗	0.0415 ∗ ∗∗	0.0228	0.0291	0.0591 ∗ ∗∗	0.0410 ∗ ∗	0.0546 ∗ ∗∗	0.0447 ∗ ∗
	(1.02)	(2.38)	(2.71)	(1.18)	(1.57)	(3.17)	(2.15)	(2.93)	(2.34)
Homeowner	−0.112 ∗ ∗	0.0248	−0.0455	−0.0493	−0.0580	−0.0346	−0.0426	−0.0410	−0.0485
	(−2.41)	(0.49)	(−1.32)	(−1.15)	(−1.40)	(−0.84)	(−1.02)	(−1.00)	(−1.14)
Wealth	0.0154	−0.0128	−0.00276	0.00185	0.0126	−0.0170	−0.00630	−0.00798	−0.000817
	(0.65)	(−0.61)	(−0.18)	(0.10)	(0.68)	(−0.93)	(−0.33)	(−0.43)	(−0.04)
Health & life expectancy									
Health	−0.00189	−0.00640	−0.00617	−0.0260	−0.0124	0.000988	−0.0201	0.0503	−0.0349
	(−0.04)	(−0.15)	(−0.19)	(−0.64)	(−0.33)	(0.03)	(−0.52)	(1.30)	(−0.89)
SLE-OLE	0.00137	0.00161	0.00213	−0.000331	0.00164	0.00271	0.00414 ∗ ∗	0.00310	0.00181
	(0.60)	(0.75)	(1.36)	(−0.17)	(0.89)	(1.43)	(2.17)	(1.64)	(0.93)
Outlive partner	0.0129	−0.00649	0.000432	−0.000788	−0.00909	0.00458	0.000620	0.00348	0.00486
	(1.50)	(−0.81)	(0.07)	(−0.10)	(−1.30)	(0.65)	(0.09)	(0.49)	(0.65)
Perceived product features									
Understanding	0.0130	0.0232	0.0169	0.0130	0.0181	0.0361 ∗ ∗	0.0270∗	0.00362	0.00553
	(0.81)	(1.15)	(1.37)	(0.77)	(1.21)	(2.53)	(1.79)	(0.24)	(0.37)
Riskiness	0.0142 ∗ ∗	0.00835	0.0120 ∗ ∗∗	0.0123 ∗ ∗	0.0140 ∗ ∗	0.0109 ∗ ∗	0.00802	0.00942∗	0.0211 ∗ ∗∗
	(2.29)	(1.27)	(2.66)	(2.11)	(2.55)	(2.00)	(1.44)	(1.70)	(3.79)
Control	0.00617	0.0109∗	0.00820 ∗ ∗	0.00452	0.00777∗	0.0106 ∗ ∗	0.00807∗	0.00984 ∗ ∗	0.00639
	(1.41)	(1.85)	(2.31)	(0.99)	(1.84)	(2.46)	(1.85)	(2.30)	(1.45)
Saving & planning									
Savings habit	0.0107	0.0337 ∗ ∗	0.0215 ∗ ∗	0.0289 ∗ ∗	0.0136	0.0292 ∗ ∗	0.0234∗	0.0135	0.0175
	(0.77)	(2.18)	(2.11)	(2.24)	(1.12)	(2.40)	(1.87)	(1.10)	(1.38)
Spending horizon	−0.0209	−0.0371	−0.0302	−0.0144	−0.0462	−0.0186	−0.0228	−0.0393	−0.0284
	(−0.44)	(−0.90)	(−0.99)	(−0.38)	(−1.26)	(−0.50)	(−0.61)	(−1.06)	(−0.74)
Future time	0.0141	0.0117	0.0143	0.00248	0.0129	0.0259	0.0108	0.0244	0.0193
	(0.70)	(0.54)	(0.98)	(0.13)	(0.74)	(1.44)	(0.60)	(1.37)	(1.04)
Fin plan	−0.0573	0.0517	−0.00555	0.0160	−0.00613	0.0267	−0.0151	−0.0427	−0.0115
	(−1.47)	(1.15)	(−0.19)	(0.43)	(−0.17)	(0.75)	(−0.41)	(−1.20)	(−0.31)
SA planning knowledge	0.0106	−0.0598 ∗ ∗∗	−0.0211	−0.0202	−0.0245	−0.0197	−0.0205	−0.0209	−0.0188
	(0.56)	(−2.91)	(−1.51)	(−1.13)	(−1.44)	(−1.19)	(−1.23)	(−1.25)	(−1.10)
SA retirement distant	0.0237∗	−0.00718	0.00786	0.00714	0.0121	0.00453	0.00986	0.00403	0.00871
	(1.95)	(−0.58)	(0.91)	(0.66)	(1.16)	(0.44)	(0.94)	(0.39)	(0.82)
Personality Traits									
Conscientiousness	0.0220	−0.0370	−0.00769	0.00395	−0.0165	−0.00924	−0.00907	0.0156	−0.0285
	(0.59)	(−0.90)	(−0.28)	(0.11)	(−0.50)	(−0.28)	(−0.26)	(0.47)	(−0.82)
Extrovert/Open	−0.0483	−0.0329	−0.0455∗	−0.0606∗	−0.0572∗	−0.0488	0.00841	−0.0350	−0.0769 ∗ ∗
	(−1.31)	(−0.85)	(−1.70)	(−1.78)	(−1.77)	(−1.54)	(0.26)	(−1.07)	(−2.30)
Agreeable/Emotional	0.00196	−0.0111	−0.00681	0.0302	−0.0230	0.00282	−0.0273	−0.0251	−0.00678
	(0.05)	(−0.26)	(−0.24)	(0.82)	(−0.67)	(0.08)	(−0.77)	(−0.72)	(−0.19)
Risk	−0.0129	0.00354	−0.00359	−0.00267	−0.00633	−0.00375	−0.00135	0.000601	−0.00543
	(−1.52)	(0.41)	(−0.59)	(−0.34)	(−0.88)	(−0.52)	(−0.18)	(0.08)	(−0.73)
Patience	0.0189 ∗ ∗	0.00436	0.00896	0.00983	0.00772	0.00302	0.0145∗	0.0102	0.0118
	(2.23)	(0.50)	(1.47)	(1.25)	(1.07)	(0.41)	(1.94)	(1.39)	(1.51)
Demographics									
Age	0.00995∗	0.00257	0.00587∗	0.00694	0.0101 ∗ ∗	0.00534	0.00785∗	0.00137	0.00424
	(1.95)	(0.51)	(1.65)	(1.56)	(2.39)	(1.26)	(1.80)	(0.32)	(0.97)
Female	−0.0693∗	0.00445	−0.0240	−0.0556	−0.0407	−0.0446	0.0171	−0.0000629	0.00223
	(−1.65)	(0.11)	(−0.82)	(−1.47)	(−1.14)	(−1.26)	(0.47)	(−0.00)	(0.06)
Single	0.184 ∗ ∗∗	0.178 ∗ ∗∗	0.162 ∗ ∗∗	0.114 ∗ ∗	0.124 ∗ ∗	0.190 ∗ ∗∗	0.128 ∗ ∗	0.206 ∗ ∗∗	0.213 ∗ ∗∗
	(2.96)	(2.87)	(3.65)	(2.02)	(2.34)	(3.48)	(2.34)	(3.83)	(3.85)
Children	−0.00127	−0.0630	−0.0403	−0.0105	−0.0635∗	−0.0417	−0.0266	−0.0441	−0.0567
	(−0.03)	(−1.45)	(−1.42)	(−0.29)	(−1.83)	(−1.21)	(−0.76)	(−1.28)	(−1.60)
Bachelor's degree	−0.0514	−0.0480	−0.0518∗	−0.0298	−0.0285	−0.0404	−0.0683 ∗ ∗	−0.0708 ∗ ∗	−0.0674∗
	(−1.31)	(−1.20)	(−1.85)	(−0.83)	(−0.84)	(−1.21)	(−1.96)	(−2.06)	(−1.90)
In labor force	−0.0156	−0.0217	−0.0210	0.0301	−0.0442	−0.0302	−0.0256	−0.0542	−0.0126
	(−0.34)	(−0.44)	(−0.62)	(0.70)	(−1.08)	(−0.74)	(−0.62)	(−1.32)	(−0.30)
Self-employed	−0.0205	−0.0465	−0.0359	−0.0570	−0.0630	0.00205	0.00765	−0.0697	−0.0970 ∗ ∗
	(−0.39)	(−0.83)	(−0.92)	(−1.13)	(−1.34)	(0.04)	(0.16)	(−1.51)	(−2.02)
Constant	−0.724 ∗ ∗	−0.176	−0.384	−0.492	−0.416	−0.302	−0.405	−0.170	−0.244
	(−2.12)	(−0.52)	(−1.59)	(−1.61)	(−1.43)	(−1.04)	(−1.35)	(−0.57)	(−0.81)
N	6,018	6,000	12,018	2,003	2,003	2,003	2,003	2,003	2,003

Dependent variable: logged money's worth ratio (as displayed in Table 7); t statistics in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(institutional settings, product endowment, information framing and financial capabilities), those informed by economic (rational) influences and other factors.

4.1 Annuity valuation: main behavioral factors

The experimental design includes features to investigate to what extent behavioral factors such as product endowment and information framing (as well as institutional setting and financial capability) are associated with the valuation of the Guaranteed Lifetime Income product. Moreover, we are interested in whether -as for the perceived product features- the engagement of the participant is important in explaining the behavioral factors.

It is important to remember that participants completed the iMPL tasks immediately after the perceived product feature questions. In the iMPL task participants have the opportunity to receive new information from use of the retirement calculator on the possible income stream generated from the product portfolios (i.e., outcomes), depending on the assumptions they set. In addition, the "framed" general information (see Table 3) is repeated on each screen.

Institutional settings

Whereas for the engaged participants the real world institutional setting was important for perceived product features, it is not important for the valuation of the Lifetime Guaranteed Income product in our experiment.

In contrast, participants with low engagement need to have a lower value of the Lifetime Guaranteed Income product in order to accept this product over the Flexible Account product. Hence, institutional settings remain important, leading to a higher valuation of the product that the less engaged participants are not typically able to purchase in their real world retirement income system. However, the various sources of information provision (presentation of product features, product knowledge quiz and retirement calculator) in the experiment are such that for engaged participants the effect of the real world retirement income system is offset. This is the case despite the complex task of valuing a lifetime income stream.

Product endowment

We observe substantial effects for the product endowment treatment (that is, WTP or WTA). When a participant is given an income and asked how much he requires to give up the income, the valuation of

the Guaranteed Lifetime Income product is much higher than when he is asked how much he is willing to pay for the Guaranteed Lifetime Income product. This is contrary to Willig (1976) which shows that the price changes of willingness to pay (price changes for compensating) and willingness to accept (price changes for equivalent) should be very close in value, depending on the size of the income elasticity of the demand for the product. Given that the income effects are minor in the experimental task, one would expect minor effects. An explanation of the size of the treatment effect would be the lack of substitutes (Hanemann, 1991). This disparity between WTP and WTA is well documented in the literature (Knetsch and Sinden, 1984) and in the domain of valuing retirement income streams, the gap between WTA and WTP has been investigated in Brown et al. (2017b) and Schreiber et al. (2016) who find a WTA to WTP ratio of the price of a factor three to four. Our effects are much smaller than the values in those studies.

Brown et al. (2017b) and Brown et al. (2017a) both find cognition and complexity to be factors which can explain the high buy-sell spread. The Flexible Account product is complex as drawdown products have many options (investment portfolio, draw down rates) and the Guaranteed Lifetime Income product is complex to value as it includes inflation, compounding and longevity risk. The effect of *WTP treatment LOW* is of similar size as the effect of the treatment itself. Hence, participants with low engagement with the experimental task had a twice as large WTP-WTA gap than the engaged. This is supporting evidence that complexity might reduce the valuation of an income stream as participants who report to have found the experimental survey complex value the annuity less.

Our experimental setting has tried to eliminate or reduce this barrier by using the iMPL methodology and providing participants with a retirement calculator (which illustrates key outcomes of their decisions). Overall there seems to be evidence that the experimental design succeeded, as our financial capability measures are not significant despite the intrinsic complexity of the task. Our results supplement these earlier studies by showing that even after reducing the complexity of the task a WTP-WTA gap remains. Hence, the implication is that online tools similar to our retirement calculator or having access to financial advice could reduce the WTP-WTA gap, but would probably not eliminate it.

The implication is that a default for retirement savings drawdown products -which would induce either a WTP or a WTA frame- would play an important role in the choice between an income product and a drawdown product. This is also supported by the following three findings (discussed later more in detail). First, participants who have a high income prefer the income product, as choosing the draw down product would reduce their income replacement rate more due to the fixed state pension income. Second, Australians relative to Dutch are more reluctant to fully annuitize their retirement savings. Third, the

self-employed who typically have to plan and organize retirement savings themselves, are reluctant to give up any of their wealth to provide for an income just above the state pension level.

In our experimental design we are careful to control for participants' misconceptions. First, we included a practice round before we ask participants to complete the six experimental tasks. Second, we included a number of explanatory variables to capture the number of mistakes in the product knowledge quiz, an indicator of whether the participant found the experimental survey confusing, the time spent on each within-subject iMPL treatment and the order in which the treatment was presented. Given that order does not play an effect, the preference hypothesis identified by Plott (1996) does not seem to play a major role in our experimental setting.

Information framing

We find that the information framing effect is not significant. For engaged participants, information framing is both economically and statistically insignificant. However, for the low engaged, despite not being statistically significant, information framing is economically significant with a magnitude of approximately a 9% higher or lower valuation of the Lifetime Guaranteed Income product when altering the information frame. We note that the results are robust when excluding product features (see Table 12).

We find that for engaged participants the provision of "framed" information on top of each screen in the iMPL task does not influence benefit choice. We suggest that this is because engaged participants have utilized the objective information provided on various occasions prior to the iMPL tasks and in the context of the retirement calculator.

In contrast, less engaged participants would have likely utilized less of the objective information provided in the experimental survey and paid more attention to the "framed" information clearly visible on the top of each screen in each of the iMPL tasks. As expected, the gain frame which highlights the positive insurance feature against outliving one's wealth of the Lifetime Guaranteed Income product seems to enhance the value of the product. On the other hand, the consumption frame highlights the risk of unexpected expenditures and therefore reduces the value of the Lifetime Guaranteed Income product to the less engaged.

The literature on the effects of information framing on the demand for retirement benefit products is mixed. Our result of no effect of information framing for engaged participants is despite the "framed" information presented at the top of the screen for each of the iMPL task. However, the other experimental survey design features, in particular the retirement calculator, were intended to encourage the participant

think about how quickly to spent down assets, which would have reduced the complexity of the tradeoff they were asked to make between the portfolios in the iMPL tasks. This is supported by our finding that the financial capability measures are not significant.

Financial capabilities

For engaged participants, financial capabilities do not influence the valuation of the Lifetime Guaranteed Income product. This is in contrast to the effect financial capabilities had on the perceived riskiness and control of the products and in similar studies on retirement product choices. We suggest that this difference is due to the inclusion of a retirement calculator in conjunction with each iMPL task which provided engaged participants with the information they needed to make an informed choice. Hence, the engaged participant utilized information not only on the features of the product, but also the possible income stream it could generate, conditional on assumptions the participant could alter.

In contrast, financial capabilities do play a role in the valuation of the Lifetime Guaranteed Income product for low engaged participants. For low engaged Dutch participants, having low numeracy skills decreases their valuation of the Lifetime Guaranteed Income product, likely because these participants underestimate the income the Flexible Account product can deliver. This effect is not present for low engaged Australians, as they are likely more aware, from peers with experience of the predominant flexible drawdown products, of the risk of outliving one's wealth. Therefore, they would more likely consider a more conservative drawdown strategy for the Flexible Account product than low engaged Dutch participants.

Better financial literacy skills, especially for low engaged Dutch participants participants could suggest that they consider themselves more capable to invest in the stock market and therefore value the Flexible Account product more. In addition, for the low engaged Dutch participant, better financial literacy skills help participants to understand the product they are less familiar with. For Australians higher self-assessed financial literacy could suggest that they understand the product they are less familiar with even though they have not utilized all the information that was available to them in the experimental task.

4.2 Annuity valuation: main rational factors

Between-subject treatments: liquidity

The six within-subject iMPL treatments with varying portfolio compositions (and therefore access to liquidity) can be used to examine the effect of the lack of substitutes (Hanemann, 1991). An income stream

is typically irreversible and only by saving from the income can a participant slowly increase his liquid wealth again. Although the wealth in a Flexible Account product could be used to purchase an annuity after retirement, this rarely occurs in practice. The voluntary annuity market in the Netherlands and Australia is small. Therefore, most participants would consider the decision between product portfolios to be an irreversible decision. Substitutes for income (except the state pension and the imputed rent from owning a home) and wealth are scarce for retirees. Given that retirement savings are a sizeable proportion of their asset holdings, the allocation decision could have substantial welfare effects if the participant faced a large disutility from a non-optimal product mix.

For the Dutch sub-sample we observe from the within-subject treatment effects that participants would prefer not to diversify. The treatment 1-2/3 (base case) has the highest valuation by the Dutch participants. However, the treatment effects are not significant except for the other extreme treatment 1/3-0. This does however signal that the Dutch participants would generally have a larger disutility from giving up some of their income in exchange for liquid wealth than for giving up a similar amount of their income in exchange for liquid wealth when they already have a lower income and more liquid wealth. As the Flexible Account product would provide flexibility for unexpected expenses, one would expect the participants to value this feature more when they have most of their wealth in the inflexible Guaranteed Lifetime Income product. This result can also be interpreted as the Dutch preferring to stick to their real world retirement income system (of full annuitization). This is contrary to the 1-2/3 portfolio where the Dutch participant might stick with the preference to the simplicity of managing an income product, the 1/3-0 portfolio would induce the participant to consider how to manage the wealth in the Flexible Account product. This does reduce the valuation of the Lifetime Guaranteed Income product for the Dutch sub-sample.

Compared to the Dutch, the Australian participants do value income less when they have to fully annuitize their retirement wealth than when they have to partly annuitize. However, they too have a tendency to stick to their real world retirement drawdown system, as they also value the income less in the case they have to annuitize part of their retirement wealth (treatment 1/3-0) or if they have the option between only income and only liquid wealth in addition to income at the state pension level (treatment 1-0).

We also test the product endowment differences between the Dutch and Australian sub-samples in column (3) of Table 11 which includes the interaction term between being Australian and the 1-2/3 treatment. As expected, we observe that the Dutch value the additional income much more than

Australians when they already have a sizeable income. Similarly, using the interaction term between being self-employed and treatment 1/3-0, we test whether the self-employed do not want to give any of their accumulated wealth up for an income. Again, our results support our hypothesis, although this is not significant for the Dutch sub-sample. This might be due to Dutch self-employed, who had in the past accumulated a DB pension, reducing the product endowment.

Retirement income replacement rate

A participant's financial capabilities or labor market participation does not have a significant influence on the valuation of the Lifetime Guaranteed Income product. Nor does liquid (non-housing and non-retirement) wealth. However, the income replacement rate does play a role. Participants who have a high income do value the Lifetime Guaranteed Income product more. Participants who own their home derive an imputed income from it which would equate to the cost of renting the property. Since in retirement, mortgage repayments are typically much lower than earlier in the life cycle, the difference in replacement rate would be smaller for homeowners than for renters, making them value the lifetime Guaranteed Income product less. This is in line with empirical observations in, for example, the U.K.[20] and Australia that people tend to take small pension pots as a lump sum whereas larger pots are either annuitized or converted into an income product. In addition, it could be driven by the finding in Goldstein et al. (2016) that people tend to undervalue an annuity when the income of the annuity is small, but overvalue it when it is large.

Health and life expectancy: the money's worth

We can use our collected covariates to investigate the extent to which the participant's choice is driven by monetary reasons (that is, choosing a portfolio as it is good value for money) or the extent to which it is driven by an intrinsic preference for one product over the other (that is the perceived product features).

A Lifetime Guaranteed Income product would be good value for money if the participant is in good health and expects to live long. However, as indicated in Table 9, the three measures relating to life expectancy in the "health and life expectancy" category are all not significant. This would indicate that the participant's choice for the portfolio of retirement benefit products is not driven by their (private) information on their expected remaining lifetime. We note that the *SLE-OLE* measure typically has the expected sign in the regressions (and is significant in regression (7) too at a level of significance of 5%), indicating that there might be a small effect that people who expect to live longer would find a lifetime guaranteed income more preferable.

[20]Financial Conduct Authority Data bulletin (10) reports that 86% of people with pension pots of less than £10,000 chose full cash withdrawals whereas 90% of people with pension pots over £250,000 chose annuities or drawdown products.

Perceived product features

The perceived product features *Riskiness* and *Control* have a significant effect on the preference for the Guaranteed Lifetime Income product relative to the Flexible Account product. This indicates that people who see the Lifetime Guaranteed Income product relative to the Flexible Account as having more attractive features do value the Lifetime Guaranteed Income product more. This would indicate that the utility derived from the product would also have an influence on the preference for the products.

4.3 Annuity valuation: other factors

Many of the parameter estimates related to personal characteristics, both variables related to saving & planning and personality traits, are not significant for the valuation of annuities at a 5% significance level.

In the Dutch sub-sample those who are more patient prefer the Lifetime Guaranteed Income product more. People who are less patient can use the money in the Flexible Account to consume more today. Although *Patience* is not significant for the Australian sub-sample, *Savings habit* is. Since people who have better savings habits also tend to be more patient, and Australians who are better savers (and thus typically more patient) tend to prefer the Lifetime Guaranteed Income product more. Moreover, Australians with high levels of self-assessed planning knowledge are more likely to prefer the Flexible Account product more.

Gender generally has no significant effect, even though women tend to live longer than men. The sign for *Females* is negative, which would even imply that women, who live longer, would value the Lifetime Guaranteed Income product less than males. However, the gender differences in life expectancy was also expected to have a minor effect given that the Lifetime Guaranteed Income product is a joint and survivor annuity and not a single life annuity.

Of the demographic variables, only the variable *Single* is significant at a 5% level. The effect of being single rather than living together could be that singles prefer an income more than people in a couple. In a couple there would be more opportunity for home production, which could be interpreted in economic terms as an income. However, one does have to be careful interpreting this variable as there is also a pricing difference between a joint and survivor annuity and a single life annuity. Hence, it could also be that participants who are part of a couple value the survivor benefit less than our calculated price.

Experimental design: active participant

People who have the opportunity to exercise more choice in the real world retirement system do prefer the

Guaranteed Lifetime Income product less. However, as the retirement system and the choice menu are different in the two countries, there are other variables which are significant in our regression. Australians have ample choice and those who prefer to exercise it would typically indicate that they have a good retirement planning knowledge. Contrary to Australians, the Dutch do not have choice of retirement investments: these are decided by the fiduciary (typically a pension fund). However, people can choose to exercise the option to retire early. Hence, for those who exercise the option retirement is not distant and they value the Lifetime Guaranteed income product less.

5 Conclusions and policy implications

This paper investigates the stated attractiveness of partial and full annuitization. We use an experimental survey to elicit an individual's willingness to pay or willingness to accept annuities in a setting where participants choose a preferred allocation of two retirement benefit products - a lifetime annuity (which we call Guaranteed Lifetime Income product) and a phased withdrawal product (which we call a Flexible Account product). To assist participants make informed choices, we reduce the cognitive difficulty associated with choice of allocations of complex and likely unfamiliar products by: providing detailed information about the features of the two products; implementing an incentivized product knowledge test with feedback; using the iMPL methodology to reduce the cognitive complexity of the valuation task; and by providing a retirement calculator to illustrate the retirement income implications of the chosen portfolio of retirement benefit products.

The experimental survey was conducted in two countries - Australia and the Netherlands - which allows investigation of the impact of real world institutional differences. The former operates a DC pension system, with choice of retirement benefit (which includes flexible drawdowns), while the latter is predominantly a DB pension system with mandatory annuitization.

There are several recurring themes in our analysis of the perceived understanding and perceptions of product features of the retirement benefit products. First, the impact of information framing is minimal for Australians who have "real world" familiarity with a Flexible Account-type retirement benefit product through mandatory pension system and with a Lifetime Guaranteed Income-type product from the state pension. However, for the Dutch sub-sample, who have no "real world" familiarity with a Flexible Account-type retirement benefit, information framing does influence the perception of the retirement benefit products introduced in the experimental context. Second, those participants who are financially competent and are engaged with the experimental task are better able to understand the features of the

products, which confirms findings in Bateman et al. (2016a). Third, those participants who have thought more about retirement planning and have a need for income in retirement have more understanding of the Lifetime Guaranteed Income product. Finally, comparing Australian participants with Dutch participants, the former have a more favorable perception of the Flexible Account product relative to the Lifetime Guaranteed Income product. This is likely be due to the lack of familiarity with annuity-type products in the real world institutional arrangements in which drawdown products are almost always taken and the voluntary annuity market has been, until recently, almost non-existent (Iskhakov et al., 2015).

In terms of the valuation of lifetime annuities we find a product endowment effect, identified as a gap between the "willingness to pay (WTP)" and "willingness to accept (WTA)", which is twice as large for participants with low engagement in the experimental task as for engaged participants. However, in general the WTP-WTA gap in our experimental survey is much smaller than in previous experimental settings (such as Brown et al., 2017a). This could be due to the experimental design which included a simple retirement calculator (indicating outcomes in terms of the impact on potential spending in retirement of the income streams corresponding to individual's choices) to reduce cognitive effort.

While we do find a product endowment effect, we find no information framing effect on the valuation of annuities, despite presentation of key product information in four different frames -consumption gain, consumption loss, investment gain and investment loss. Our experimental design, which provides repeated opportunities to learn about the products, and the frame-neutral detailed product descriptions (in conjunction with the framed general descriptions), successfully eliminate the potential information framing effects for most participants. The exception are those participants with low engagement with the experimental survey, where we observe that the gain frame is associated with a higher valuation of annuities.

We also find that participants do not determine their preference for annuities relative to drawdown products based on money's worth, but rather on whether the product provides them with utility. For example, the variables we collect that relate to (subjective) life expectancy do not explain an individual's preference for annuities, whereas product perceptions, in terms of riskiness or control, do explain their preferences. Moreover, people with higher retirement savings are more willing to annuitize. This can be explained by the illusion of wealth, as well as the lessor impact of the state pension on the retirement income replacement ratio for those on high incomes.

Overall our findings suggest three key lessons for policy and product development. First, the effects of familiarity with current products and policy settings are strong, so it cannot be assumed that people will

fully understand the features and implications of "new" products and policies. Second, clear presentation of basic information on retirement benefit product features is essential to minimize the effects of information framing. Third, financial advice, (such as via the pre-populated online calculator we provide) that presents details of the rest of lifetime implications of alternative product allocations, should be available at the time of product allocation, in order to facilitate informed choice.

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A Robustness check

Table 12: Robustness check Annuity factor Regression table

	NL (1)	AU (2)	sample (3)	1-2/3 (4)	1-1/3 (5)	1-0 (6)	2/3-1/3 (7)	2/3-0 (8)	1/3-0 (9)
Institutional settings									
Australian			−0.0374	−0.0957 * *	−0.00268	−0.0528	−0.0311	−0.0437	−0.0510
			(−1.10)	(−2.27)	(−0.07)	(−1.29)	(−0.76)	(−1.08)	(−1.22)
Australian LOW			0.143 * *	0.169 * *	0.118	0.118	0.147*	0.108	0.197 * *
			(2.27)	(2.13)	(1.55)	(1.56)	(1.94)	(1.41)	(2.52)
Endowment effect									
WTP treatment	−0.143 * **	−0.140 * **	−0.131 * **	−0.108 * **	−0.127 * **	−0.150 * **	−0.124 * **	−0.123 * **	−0.151 * **
	(−3.74)	(−3.38)	(−4.63)	(−3.00)	(−3.73)	(−4.36)	(−3.52)	(−3.59)	(−4.23)
WTP treatment LOW	−0.103	−0.246 * **	−0.196 * **	−0.240 * **	−0.170 * *	−0.162 * *	−0.210 * **	−0.205 * **	−0.186 * *
	(−1.13)	(−2.79)	(−3.13)	(−3.09)	(−2.28)	(−2.15)	(−2.78)	(−2.72)	(−2.40)
Information framing									
Gain framing	0.0422	−0.0214	0.0113	−0.0110	0.0221	0.0198	−0.000848	0.0313	0.0153
	(1.10)	(−0.51)	(0.40)	(−0.30)	(0.65)	(0.58)	(−0.02)	(0.91)	(0.43)
Consumption framing	0.00617	0.0159	0.0138	0.00695	−0.0119	0.0280	0.00556	0.0475	0.00114
	(0.16)	(0.39)	(0.49)	(0.19)	(−0.35)	(0.82)	(0.16)	(1.39)	(0.03)
Gain framing LOW	0.0869	0.0360	0.0795	0.133*	0.0898	0.105	0.0542	0.0112	0.0780
	(0.91)	(0.41)	(1.24)	(1.66)	(1.16)	(1.37)	(0.71)	(0.14)	(1.00)
Consumption framing LOW	−0.0736	−0.0879	−0.0902	−0.0385	−0.0563	−0.119	−0.191 * *	−0.0651	−0.0628
	(−0.79)	(−1.00)	(−1.42)	(−0.49)	(−0.73)	(−1.56)	(−2.51)	(−0.86)	(−0.80)
Financial capabilities									
SA fin lit	−0.0186	0.000238	−0.00853	0.00600	−0.00211	−0.0301*	−0.00650	−0.0165	−0.00470
	(−0.93)	(0.01)	(−0.59)	(0.32)	(−0.12)	(−1.69)	(−0.36)	(−0.93)	(−0.26)
Fin lit	0.0408	0.0123	0.0282	0.0448	0.0645 * *	0.00515	0.0131	0.0435*	0.00575
	(1.40)	(0.40)	(1.32)	(1.60)	(2.51)	(0.20)	(0.49)	(1.66)	(0.21)
Numeracy	−0.0344	−0.00355	−0.0184	−0.00985	−0.0232	−0.0120	−0.0224	−0.0145	−0.0235
	(−1.62)	(−0.16)	(−1.19)	(−0.50)	(−1.26)	(−0.64)	(−1.15)	(−0.78)	(−1.21)
SA fin lit LOW	−0.0141	0.0656 * *	0.0120	0.00261	−0.00528	0.0175	0.0132	0.0345	0.00851
	(−0.52)	(2.42)	(0.65)	(0.11)	(−0.23)	(0.78)	(0.57)	(1.55)	(0.37)
Fin lit LOW	−0.0897*	−0.0377	−0.0646*	−0.0677	−0.0783*	−0.0624	−0.0711	−0.101 * *	−0.0161
	(−1.66)	(−0.69)	(−1.69)	(−1.45)	(−1.69)	(−1.41)	(−1.52)	(−2.15)	(−0.34)
Numeracy LOW	0.125 * **	−0.00205	0.0660*	0.0585	0.0538	0.0609	0.0920 * *	0.0548	0.0575
	(2.71)	(−0.04)	(1.92)	(1.37)	(1.29)	(1.51)	(2.19)	(1.30)	(1.34)
Experimental design									
Quiz mistakes	0.144	0.0810	0.0790	0.101	0.192 * *	0.0300	0.126	0.0603	−0.0269
	(1.12)	(0.81)	(1.02)	(1.04)	(2.17)	(0.32)	(1.35)	(0.67)	(−0.29)
Short time	0.0657	−0.106	−0.0408	−0.0510	0.0000139	−0.0474	0.00219	−0.102	−0.103
	(0.49)	(−1.06)	(−0.50)	(−0.51)	(0.00)	(−0.51)	(0.02)	(−1.08)	(−1.06)
Short time x Quiz mistakes	−0.166	0.0924	−0.00895	−0.0323	−0.146	0.0480	−0.0642	0.110	−0.0122
	(−1.12)	(0.70)	(−0.09)	(−0.28)	(−1.26)	(0.42)	(−0.53)	(0.94)	(−0.11)
Confusing	−0.108 * *	−0.0866*	−0.0996 * **	−0.0655	−0.121 * **	−0.110 * *	−0.0763*	−0.101 * *	−0.128 * **
	(−1.98)	(−1.66)	(−2.67)	(−1.42)	(−2.69)	(−2.47)	(−1.72)	(−2.30)	(−2.86)
Duration	−0.00251	0.00171	−0.00117	−0.0159	−0.0308*	−0.0262	−0.0169	−0.00529	−0.00955
	(−0.35)	(0.19)	(−0.21)	(−0.92)	(−1.85)	(−1.52)	(−1.07)	(−0.32)	(−0.66)
Order	−0.00629	0.00398	−0.00137	−0.00345	−0.0209*	0.0153	−0.0229 * *	−0.00621	−0.00361
	(−1.31)	(0.78)	(−0.39)	(−0.32)	(−1.96)	(1.50)	(−2.15)	(−0.60)	(−0.34)
Likelihood to act	−0.0423 * **	0.00130	−0.0205 * *	−0.0224	−0.00693	−0.0407 * *	−0.0598 * **	−0.0439 * **	−0.0241
	(−3.24)	(0.10)	(−2.20)	(−1.28)	(−0.41)	(−2.45)	(−3.59)	(−2.63)	(−1.42)
Between-subject treatments: liquidity									
1-2/3	0	0	0						
	(.)	(.)	(.)						
1-1/3	−0.0262	0.0380 * *	−0.0201						
	(−1.49)	(1.97)	(−1.20)						
1-0	−0.0155	0.0212	−0.0235						
	(−0.84)	(1.08)	(−1.38)						
2/3-1/3	−0.0151	0.0374*	−0.0148						
	(−0.75)	(1.76)	(−0.81)						
2/3-0	−0.0190	0.0338	−0.0190						
	(−0.92)	(1.59)	(−1.03)						
1/3-0	−0.0456 * *	0.00303	−0.0481 * *						
	(−2.06)	(0.13)	(−2.46)						
SEx(1/3-0)	−0.0317	−0.0911*	−0.0624*						
	(−0.70)	(−1.93)	(−1.90)						
AUx(1-2/3)			−0.0499 * *						
			(−2.17)						
Retirement income replacement rate									
Household income	0.0329	0.0495 * *	0.0465 * **	0.0274	0.0347*	0.0650 * **	0.0453 * *	0.0580 * **	0.0514 * **
	(1.39)	(2.44)	(3.02)	(1.42)	(1.87)	(3.46)	(2.38)	(3.11)	(2.68)
Homeowner	−0.109 * *	0.0215	−0.0448	−0.0479	−0.0567	−0.0367	−0.0443	−0.0390	−0.0431
	(−2.35)	(0.43)	(−1.30)	(−1.12)	(−1.38)	(−0.90)	(−1.07)	(−0.95)	(−1.01)
Wealth	0.0134	−0.0140	−0.00431	−0.0000709	0.0105	−0.0180	−0.00698	−0.00894	−0.00467
	(0.56)	(−0.67)	(−0.28)	(−0.00)	(0.57)	(−0.98)	(−0.36)	(−0.48)	(−0.24)
Health & life expectancy									
Health	−0.00139	−0.00513	−0.00614	−0.0255	−0.0118	0.00361	−0.0182	0.0482	−0.0368
	(−0.03)	(−0.12)	(−0.19)	(−0.64)	(−0.31)	(0.10)	(−0.47)	(1.25)	(−0.94)
SLE-OLE	0.00151	0.00152	0.00215	−0.000248	0.00169	0.00263	0.00408 * *	0.00308	0.00202
	(0.65)	(0.71)	(1.37)	(−0.13)	(0.92)	(1.38)	(2.14)	(1.63)	(1.03)
Outlive partner	0.0137	−0.00606	0.000911	−0.000605	−0.00859	0.00539	0.00128	0.00415	0.00497
	(1.59)	(−0.76)	(0.15)	(−0.08)	(−1.23)	(0.76)	(0.18)	(0.59)	(0.67)
Saving & planning									
Savings habit	0.00959	0.0321 * *	0.0201 * *	0.0278 * *	0.0119	0.0272 * *	0.0219*	0.0126	0.0161
	(0.69)	(2.07)	(1.97)	(2.16)	(0.99)	(2.23)	(1.76)	(1.03)	(1.27)
Spending horizon	−0.0266	−0.0352	−0.0302	−0.0136	−0.0459	−0.0200	−0.0240	−0.0393	−0.0257
	(−0.56)	(−0.86)	(−0.99)	(−0.35)	(−1.25)	(−0.54)	(−0.65)	(−1.06)	(−0.67)
Future time	0.0148	0.0118	0.0145	0.00239	0.0128	0.0266	0.0114	0.0241	0.0184
	(0.73)	(0.54)	(0.99)	(0.13)	(0.74)	(1.47)	(0.63)	(1.35)	(0.98)
Fin plan	−0.0581	0.0482	−0.00872	0.0127	−0.0103	0.0225	−0.0183	−0.0439	−0.0156
	(−1.49)	(1.08)	(−0.30)	(0.34)	(−0.29)	(0.63)	(−0.50)	(−1.23)	(−0.42)
SA planning knowledge	0.0122	−0.0592 * **	−0.0195	−0.0187	−0.0222	−0.0169	−0.0184	−0.0204	−0.0171
	(0.63)	(−2.89)	(−1.39)	(−1.05)	(−1.31)	(−1.02)	(−1.10)	(−1.21)	(−1.00)
SA retirement distant	0.0235*	−0.00663	0.00821	0.00751	0.0125	0.00475	0.0101	0.00447	0.00943
	(1.93)	(−0.54)	(0.95)	(0.69)	(1.20)	(0.46)	(0.97)	(0.43)	(0.88)
Personality Traits									
Conscientiousness	0.0294	−0.0443	−0.00716	0.00545	−0.0159	−0.0101	−0.00955	0.0160	−0.0257
	(0.79)	(−1.06)	(−0.26)	(0.15)	(−0.48)	(−0.30)	(−0.28)	(0.48)	(−0.74)
Extrovert/Open	−0.0444	−0.0301	−0.0418	−0.0577*	−0.0533*	−0.0446	0.0115	−0.0319	−0.0719 * *
	(−1.20)	(−0.77)	(−1.56)	(−1.69)	(−1.65)	(−1.40)	(0.35)	(−0.97)	(−2.14)
Agreeable/Emotional	0.00239	−0.00743	−0.00406	0.0337	−0.0199	0.00475	−0.0261	−0.0240	−0.000528
	(0.06)	(−0.18)	(−0.14)	(0.92)	(−0.58)	(0.14)	(−0.74)	(−0.69)	(−0.01)
Risk	−0.0167 * *	0.00136	−0.00654	−0.00514	−0.00940	−0.00755	−0.00414	−0.00160	−0.00872
	(−1.99)	(0.16)	(−1.09)	(−0.67)	(−1.32)	(−1.07)	(−0.56)	(−0.22)	(−1.16)
Patience	0.0191 * *	0.00451	0.00904	0.00997	0.00784	0.00308	0.0145*	0.0103	0.0118
	(2.26)	(0.52)	(1.49)	(1.27)	(1.09)	(0.42)	(1.94)	(1.39)	(1.52)
Demographics									
Age	0.0105 * *	0.00223	0.00598*	0.00698	0.0102 * *	0.00550	0.00795*	0.00145	0.00435
	(2.04)	(0.44)	(1.68)	(1.56)	(2.40)	(1.29)	(1.82)	(0.33)	(0.99)
Female	−0.0683	−0.00233	−0.0260	−0.0568	−0.0432	−0.0501	0.0127	−0.00168	0.00247
	(−1.63)	(−0.06)	(−0.89)	(−1.51)	(−1.22)	(−1.42)	(0.35)	(−0.05)	(0.07)
Single	0.194 * **	0.183 * **	0.167 * **	0.120 * *	0.130 * *	0.198 * **	0.134 * *	0.209 * **	0.219 * **
	(3.11)	(2.93)	(3.76)	(2.11)	(2.46)	(3.61)	(2.45)	(3.90)	(3.93)
Children	−0.00408	−0.0678	−0.0453	−0.0142	−0.0682*	−0.0486	−0.0316	−0.0478	−0.0613*
	(−0.11)	(−1.56)	(−1.59)	(−0.39)	(−1.96)	(−1.41)	(−0.90)	(−1.39)	(−1.73)
Bachelor's degree	−0.0483	−0.0482	−0.0505*	−0.0265	−0.0259	−0.0403	−0.0684 * *	−0.0713 * *	−0.0613*
	(−1.24)	(−1.21)	(−1.81)	(−0.74)	(−0.77)	(−1.20)	(−1.97)	(−2.09)	(−1.73)
In labor force	−0.0226	−0.0235	−0.0242	0.0273	−0.0477	−0.0354	−0.0294	−0.0550	−0.0157
	(−0.49)	(−0.48)	(−0.71)	(0.64)	(−1.17)	(−0.86)	(−0.72)	(−1.34)	(−0.37)
Self-employed	−0.0176	−0.0433	−0.0346	−0.0553	−0.0612	0.00240	0.00752	−0.0689	−0.0927*
	(−0.33)	(−0.77)	(−0.89)	(−1.10)	(−1.30)	(0.05)	(0.16)	(−1.49)	(−1.94)
Constant	−0.743 * *	−0.131	−0.359	−0.484	−0.401	−0.266	−0.385	−0.153	−0.253
	(−2.16)	(−0.38)	(−1.49)	(−1.59)	(−1.38)	(−0.91)	(−1.28)	(−0.51)	(−0.84)
N	6,018	6,000	12,018	2,003	2,003	2,003	2,003	2,003	2,003

Supplemental Materials

Screen shots of Australian survey

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ONLINE PARTICIPATION INFORMATION STATEMENT

Retirement income product decisions
Professor Hazel Bateman

This research study is being carried out by the following researchers:		
Role	**Name**	**Organisation**
Chief Investigator	Professor Hazel Bateman	UNSW Australia
Co-Investigator/s	Professor Eduard Ponds	Tilburg University
	Dr Ralph Stevens	UNSW Australia
	Dr Jennifer Alonso Garcia	UNSW Australia
Research Funder	This research is being funded by ARC Linkage Grant LP140100104	

What is this research about?
You are invited to take part in this online research study. You have been invited because you fulfil the relevant survey parameters of being age 18 or over.

The aim of the research study is to investigate individuals' financial decisions regarding financial arrangements in retirement. We hope to learn more about how people finance their daily living.

Do I have to take part in this research study?
This Participant Information Statement tells you about the research study. It explains the research tasks involved. Knowing what is involved will help you decide if you want to take part in the research.

Please read this information carefully. Before deciding whether or not to take part, you might want to talk about it with a relative or friend.

Participation in this research is voluntary. If you don't wish to take part, you don't have to. Your decision will not affect your relationship with UNSW Australia or Tilburg University.

What does participation in this research require, and are there any risks involved?
If you decide to take part in the research study, you will be asked to complete an online questionnaire which will ask you to make hypothetical financial decisions about the allocation of your retirement savings, and to answer questions about demographics and personal characteristics. We expect this activity to take up to 25 minutes.

Will I be paid to participate in this project?
You will be awarded points based on a 25 minute questionnaire if you complete this survey. You also have the opportunity to earn additional points based on your answers to questions in the survey and your attention while completing the survey.

What are the possible benefits to participation?
We hope to use the research findings to find new and better ways to help people with their retirement planning.

What will happen to information about me?
By clicking on the 'I agree' button you consent to the research team collecting and using information from the questionnaire you complete for the research study. We will keep your data for 10 years. Any information obtained in connection with this research study that can identify you will remain confidential. The project will use an external site to create, collect and analyse data collected in a questionnaire format. The site we are using is Survey Sampling International. If you agree to participate in the study, the responses you provide to the questionnaire will be stored on a host server that is used by the School of Risk & Actuarial Studies. No personal information will be collected in the questionnaire so none will be stored as data. Once we have completed our data collection and analysis, we will import the data we collect to the UNSW server. The data on the School of Risk & Actuarial Studies server will be deleted.

It is anticipated that the results of this research study will be published and/or presented in a variety of forums. In any publication and/or presentation, information will be provided in such a way that your research findings may be published, but you will not be individually identifiable in these publications.

How and when will I find out what the results of the research study are?
You have a right to receive feedback about the overall results of this study. You can tell us that you wish to receive feedback by contacting the 'Research Team Contact' detailed below. This feedback will be in the form of a working paper summarising key results, available on the 'Working papers' page of the UNSW School of Risk & Actuarial Studies website at http://www.business.unsw.edu.au/about/schools/risk-actuarial/research/publications. You will receive this feedback after the study is finished.

What if I want to withdraw from the research study?
Submitting your completed questionnaire is an indication of your consent to participate in the study. You can withdraw your responses any time before you have submitted the questionnaire. Once you have submitted it, your responses cannot be withdrawn because they are anonymous and therefore we will not be able to tell which one is yours.

What should I do if I have further questions about my involvement in the research study?
The person you may need to contact will depend on the nature of your query. If you want any further information concerning this project or if you have any problems which may be related to your involvement in the project, you can contact the following member of the research team:

Research Team Contact

Name	Hazel Bateman
Position	Professor, School of Risk and Actuarial Studies
Telephone	+61 2 9385 3096
Email	h.bateman@unsw.edu.au

What if I have a complaint or any concerns about the research study?
If you have any complaints about any aspect of the project, the way it is being conducted, then you may contact:

Complaints Contact

Position	Human Research Ethics Coordinator
Telephone	+61 2 9385 6222
Email	humanethics@unsw.edu.au
HC Reference Number	HC16449

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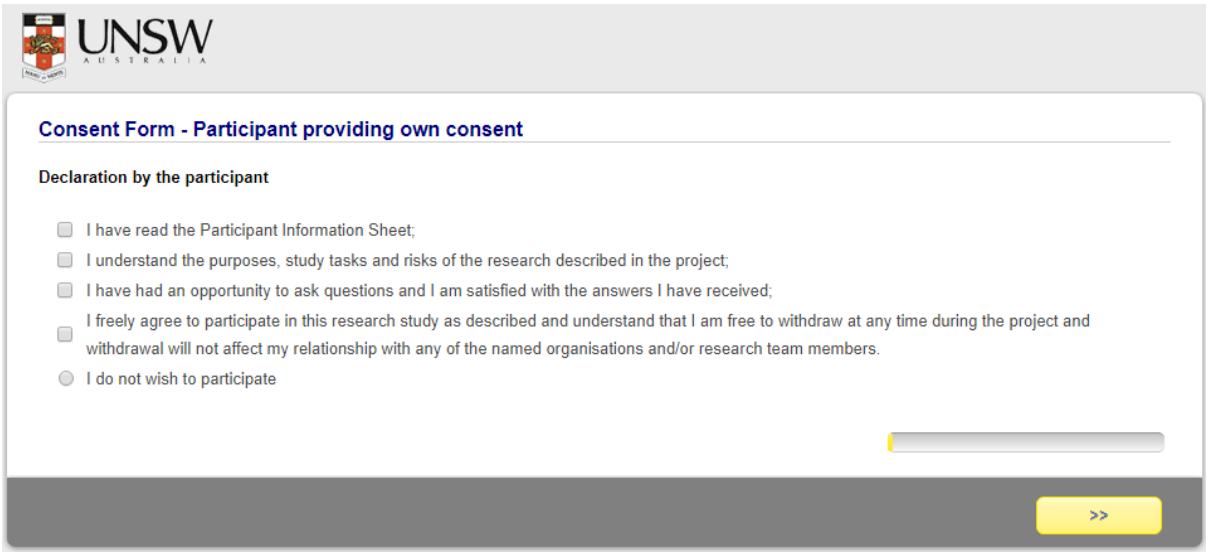

Consent Form - Participant providing own consent

Declaration by the participant

- [ ] I have read the Participant Information Sheet;
- [ ] I understand the purposes, study tasks and risks of the research described in the project;
- [ ] I have had an opportunity to ask questions and I am satisfied with the answers I have received;
- [ ] I freely agree to participate in this research study as described and understand that I am free to withdraw at any time during the project and withdrawal will not affect my relationship with any of the named organisations and/or research team members.
- ( ) I do not wish to participate

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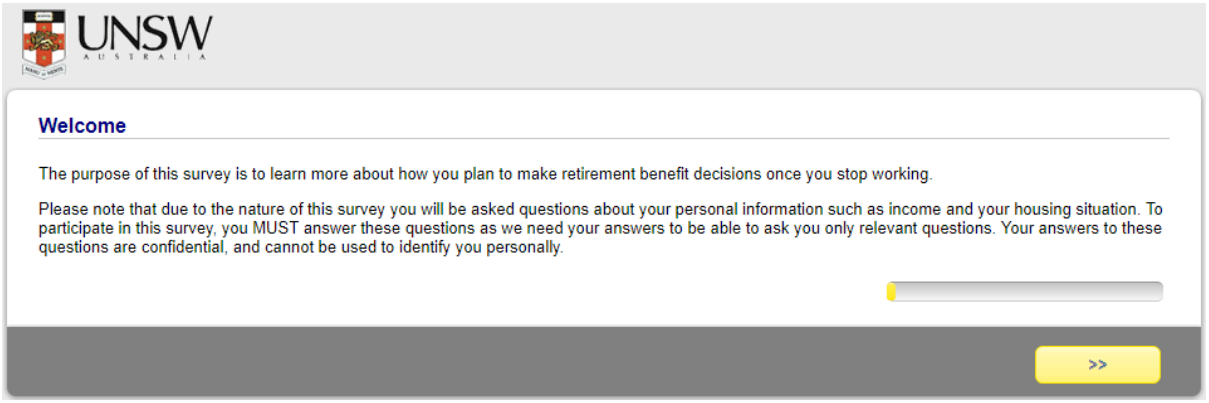

Welcome

The purpose of this survey is to learn more about how you plan to make retirement benefit decisions once you stop working.

Please note that due to the nature of this survey you will be asked questions about your personal information such as income and your housing situation. To participate in this survey, you MUST answer these questions as we need your answers to be able to ask you only relevant questions. Your answers to these questions are confidential, and cannot be used to identify you personally.

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About you

What is your age?

▼

What is your gender?

- Male
- Female

What is your marital status?

- Never married and not living in a long term (de facto) relationship
- Widowed
- Divorced
- Separated but not divorced
- Married
- Living in a long term (de facto) relationship

What is the age of your spouse or partner?

▼

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Which of the following best describes the current work status of you and your spouse or partner?

	Employed full time	Employed part time	Unemployed	Not in the labour force – Stay at home parent or caregiver	Not in the labour force – Retired	Not in the labour force – Other
You	◉	○	○	○	○	○
Your spouse or partner	◉	○	○	○	○	○

Which of the following describes your work?

- I work for an employer
- I am self employed

Which of the following describes your spouse's or partner's work?

- Works for an employer
- Self employed

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Which of the following categories best describes your annual gross household income (before tax).

If you are single this is your personal income. If you have a spouse or partner this is your combined income. If you or your partner are currently unemployed include the income in the last job you (or your spouse or partner) held.

- ○ Less than $ 47,500
- ○ Between $ 47,500 and $ 79,999
- ○ Between $ 80,000 and $ 124,999
- ○ Greater than $ 125,000

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Information

The rest of this survey consists of 4 sections:

- **Section 1:** Preference Task
- **Section 2:** Planning and personality traits
- **Section 3:** Superannuation / pension arrangements and financial competence
- **Section 4:** Demographic and personal characteristics

You will be awarded points based on a 25 minute questionnaire if you complete this survey. In addition, you can receive a **bonus payment** of up to $2.50 in panel points. Your bonus payment will depend on the answers you give to the product knowledge review quiz in Section 1 of this survey. The questions are based on the description of the products in the survey which are provided to you before the quiz; they are not testing general knowledge.

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Section 1

On leaving the workforce people use money from their superannuation fund to cover their spending.

In the questions in this part of the survey we will ask you your preference to have your superannuation savings in either of two portfolios, both consisting of two products. These two products assist you in drawing down your retirement savings to cover your spending in retirement. The products differ in the way they manage different risks related to your retirement savings. The two retirement income products are a **Lifetime Guaranteed Income Product** and a **Flexible Account Product**.

We will first teach you about the two products. We will then test your knowledge of the products using a five question review quiz. You will receive 50 cents in **bonus earnings** for each question you correctly answer in the review quiz.

After you have completed the product knowledge review quiz we will ask you to make six preference choices between the Lifetime Guaranteed Income Product and the Flexible Account Product.

The general features of the two retirement income products can be explained as follows:

- **Lifetime Guaranteed Income Product**: This product provides you with a guaranteed **return** for as long as you or your partner live even if the financial markets perform poorly. If you or your partner **live long** then you get **more** than you paid for. The **more** you buy of this product the higher the **gain** when you or your partner **live long**.
- **Flexible Account Product**: This product allows you to choose your **investment portfolio**. The more risk you're willing to take, the **higher** the expected **return**. Any remaining **account balance** is inherited by your dependents or estate when you and your partner die. The **more** you buy of this product the **higher** your **account balance** if financial markets perform **well**.

PRODUCT FEATURES:

The specific features of the two retirement income products are summarised below:

	Lifetime Guaranteed Income Product	Flexible Account Product
How much income will I receive?	You and your partner will receive a regular income	You can choose how much to withdraw each month
How long do payments last?	Your regular income will be paid for as long as you *or* your partner live	You and your partner can continue to withdraw as long as your account balance is positive
What happens if I or my partner dies?	If one of you passes away, the surviving spouse will receive the regular income. However, the income will be reduced by one third (similar to age pension)	If one of you passes away, the remaining money in your account will be left to the surviving spouse
What happens if I *and* my partner die?	If both you and your partner have passed away, there will be no inheritance for your dependents or your estate	If both you and your partner have passed away, the remaining money in your account will be inherited by your dependents or your estate
What happens if the prices of things I buy increase?	Your regular income is automatically adjusted to the price level	The amount you withdraw is not automatically adjusted to the price level. However, you can increase the amount you withdraw when the prices increase
What happens if there are fluctuations in financial markets (such as interest rates or share prices)?	Your regular income will be unchanged	Your account balance will fluctuate with financial markets
What happens if I live longer than expected?	As long as you or your partner live, you will receive a regular income	When you or your partner live long you may run the risk of outliving your account

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Section 1: Product knowledge review

Now we would like you to review your knowledge of the retirement income products. You will receive 50 cents in bonus earnings for every correct answer.

Which of the following statements apply to each of the products – **Lifetime Guaranteed Income Product** and the **Flexible Account**? Please check the tick box under the product name whenever the statement applies to it.

Each statement applies to only one product.

	Lifetime Guaranteed Income Product	Flexible Account Product
A regular payment is received for as long as my partner and I live.	○	○
My partner and I will have money in an account which we can access at any time. We can choose the amount we receive.	○	○
If both my partner and I die, payments stop and the remaining value of the product will be inherited by our dependents or estate.	○	○
Payments automatically adjust with price increases.	○	○
Our account could fluctuate with financial markets.	○	○

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Section 1: Product knowledge review

Now we would like you to review your knowledge of the retirement income products. You will receive 50 cents in bonus earnings for every correct answer.

Which of the following statements apply to each of the products – **Lifetime Guaranteed Income Product** and the **Flexible Account**? Please check the tick box under the product name whenever the statement applies to it.

Each statement applies to only one product.

	Lifetime Guaranteed Income Product	Flexible Account Product
A regular payment is received for as long as my partner and I live.	◉	○
My partner and I will have money in an account which we can access at any time. We can choose the amount we receive.	◉	○
If both my partner and I die, payments stop and the remaining value of the product will be inherited by our dependents or estate.	○	◉
Payments automatically adjust with price increases.	○	◉
Our account could fluctuate with financial markets.	○	◉

Below are the results; showing the correct answer to each statement with a green tick and whether your response was correct or incorrect:

	Lifetime Guaranteed Income Product	Flexible Account	Your Responses
A regular payment is received for as long as my partner and I live.	✓		Correct
My partner and I will have money in an account which we can access at any time. We can choose the amount we receive.		✓	Incorrect
If both my partner and I die, payments stop and the remaining value of the product will be inherited by our dependents or estate.		✓	Correct
Payments automatically adjust with price increases.	✓		Incorrect
Our regular payments could fluctuate with financial markets.		✓	Correct

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Section 1: Perception and understanding - Retirement income products

Think about the **Lifetime Guaranteed Income Product**. How well do you think you understand the features of the **Lifetime Guaranteed Income Product**?

Please tick one box on the scale where 0 means 'don't understand at all' and 10 means 'understand very well'.

Don't understand at all										Understand very well
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

Think about the **Flexible Account Product**. How well do you think you understand the features of the **Flexible Account Product**?

Please tick one box on the scale where 0 means 'don't understand at all' and 10 means 'understand very well'.

Don't understand at all										Understand very well
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

Think about the **Lifetime Guaranteed Income Product**. How risky do you think the **Lifetime Guaranteed Income Product** is?

Please tick one box on the scale where 0 means 'not risky at all' and 10 means 'very risky'.

Not risky at all										Very risky
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

Think about the **Flexible Account Product**. How risky do you think the **Flexible Account Product** is?

Please tick one box on the scale where 0 means 'not risky at all' and 10 means 'very risky'.

Not risky at all										Very risky
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

Think about the **Lifetime Guaranteed Income Product**. How much control do you think you have with the **Lifetime Guaranteed Income Product**?

Please tick one box on the scale where 0 means 'no control at all' and 10 means 'complete control'.

No control at all										Complete control
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

Think about the **Flexible Account Product**. How much control do you think you have with the **Flexible Account Product**?

Please tick one box on the scale where 0 means 'no control at all' and 10 means 'complete control'.

No control at all										Complete control
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

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Section 1: Preference task instructions

In the next few questions we will ask you to complete 6 sets of choice tasks involving the TWO retirement income products. In each task you will be asked to make a hypothetical choice between Option A and Option B. Each option includes one or both of the two retirement income products.

You will be shown a table like the one below. Each row of the table shows for Option A and for Option B the total amount in your **Flexible Account Product** and the annual income from your **Lifetime Guaranteed Income Product**. Note that all amounts are in after tax dollars and the **Lifetime Guaranteed Income Product** includes public pension payments.

Option A		Option B		Preferred Option	
Flexible Account (account balance)	**Lifetime Guaranteed Income** (per year, including Age Pension)	**Flexible Account** (account balance)	**Lifetime Guaranteed Income** (per year, including Age Pension)	Option A	Option B
$900,000	$35,000	$0	$35,000	○	○
$900,000	$35,000	$0	$57,500	○	○
$900,000	$35,000	$0	$80,000	○	○
$900,000	$35,000	$0	$102,500	○	○
$900,000	$35,000	$0	$125,000	○	○

Each row in the table above is a paired choice between Option A and Option B. As you cast your eye down the table, in each row Option B has an increasing allocation to the **Lifetime Guaranteed Income Product**.

For **each row** you will be asked to make a choice between the combination of the two products in Option A and the combination of the two products in Option B.

You will make this choice between Option A and Option B for each row by clicking either box A or B in the final column.

You should click 'Preferred Option' B for the FIRST ROW for which you prefer the combination of the two products in Option B over the combination of the two products in Option A. When you click this as your preferred choice the rest of the options are automatically allocated.

In the next few screens we show you an example of the implication of choosing Option A or Option B in the task for various rows.

To help you in your choice, after you have made your decision and clicked 'Preferred Option B' a retirement calculator will appear. This calculator will display the average annual income that this retirement allocation would provide.

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Example 1/4

For example, if we start with the first row, you have a choice between Option A ($900,000 in a Flexible Account and Lifetime Guaranteed Income of $35,000 per year) and Option B (Lifetime Guaranteed Income of $35,000 per year). Here Option A would be preferable for most people and they would click box A in the final column.

Option A		Option B		Preferred Option	
Flexible Account (account balance)	**Lifetime Guaranteed Income** (per year, including Age Pension)	**Flexible Account** (account balance)	**Lifetime Guaranteed Income** (per year, including Age Pension)	Option A	Option B
$900,000	$35,000	$0	$35,000	◉	○
$900,000	$35,000	$0	$57,500	○	○
$900,000	$35,000	$0	$80,000	○	○
$900,000	$35,000	$0	$102,500	○	○
$900,000	$35,000	$0	$125,000	○	○

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Example 2/4

If you look at the last row, you have a choice between Option A ($900,000 in a Flexible Account and Lifetime Guaranteed Income of $35,000 per year) and Option B (Lifetime Guaranteed Income of $125,000 per year). Here Option B would be preferable for most people and they would click box B in the final column.

Option A		Option B		Preferred Option	
Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Option A	Option B
$900,000	$35,000	$0	$35,000	○	○
$900,000	$35,000	$0	$57,500	○	○
$900,000	$35,000	$0	$80,000	○	○
$900,000	$35,000	$0	$102,500	○	○
$900,000	$35,000	$0	$125,000	○	◉

>>

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Example 3/4

Now look at the middle row where the most preferable option is less clear. If you prefer a Guaranteed Lifetime Income of $80,000 per year to $900,000 in a Flexible Account and Guaranteed Lifetime Income of $35,000 per year you should click box B in the final column, but if you prefer $900,000 in a Flexible Account and a Guaranteed Lifetime Income of $35,000 per year to a Guaranteed Lifetime Income of $80,000 per year you should click box A in the final column.

Option A		Option B		Preferred Option	
Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Option A	Option B
$900,000	$35,000	$0	$35,000	○	○
$900,000	$35,000	$0	$57,500	○	○
$900,000	$35,000	$0	$80,000	○	○
$900,000	$35,000	$0	$102,500	○	○
$900,000	$35,000	$0	$125,000	○	○

>>

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Example 4/4

Once you decided your choice and have clicked ">>" you are asked to make a more refined choice. For example, if you chose Option A in the second row, but Option B in the third row as shown below:

Option A		Option B		Preferred Option	
Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Option A	Option B
$900,000	$35,000	$0	$35,000	◉	○
$900,000	$35,000	$0	$57,500	◉	○
$900,000	$35,000	$0	$80,000	○	◉
$900,000	$35,000	$0	$102,500	○	◉
$900,000	$35,000	$0	$125,000	○	◉

You will next get the following question:

Please refine your choice. Cast your eye down the table and select the first row for which you prefer Option B over Option A

Option A		Option B		Preferred Option	
Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Option A	Option B
$900,000	$35,000	$0	$60,000	○	○
$900,000	$35,000	$0	$65,000	○	○
$900,000	$35,000	$0	$70,000	○	○
$900,000	$35,000	$0	$75,000	○	○

After you click ">>" you will get a similar task, but with different amounts in the options.

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We will now present you the 6 choice tasks.

>>

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Task 1 of 6

Recall the general product features:

- **Lifetime Guaranteed Income Product**: This product provides guaranteed **income** for your regular **expenses** for as long as you and your partner live, even if you or your partner live longer than expected. The **more** you buy of this product the **more** you have for regular **expenditures** for the rest of your life.
- **Flexible Account Product**: This product allows you to choose you and your partner's **income** level depending on your **expenses**. If the account balance is **sufficient** you will be able to pay for unexpected **expenses** while maintaining the same standard of living. The **more** you buy of this product the **higher** the flexibility you will have to match your **expenditures**.

Imagine that you are at retirement and you have retirement savings to allocate between the **Lifetime Guaranteed Income Product** and the **Flexible Account Product**. All options are ***after tax*** and ***include public pension payments***. In the event that you or your partner dies the **Lifetime Guaranteed Income** will be reduced by one third.

Now suppose you had the following choice:

- **Either Option A** - You **have $0** in your Flexible Account and you would receive a Lifetime Guaranteed Income of **$38,980** per year, for life
- **Or Option B** - You **have some amount** in your Flexible Account and you would receive a Lifetime Guaranteed Income of **$36,193** per year, for life

What we would like you to do is to cast your eye down the rows of the table and **select the FIRST ROW for which you prefer the combination of the two products in Option B to the combination of the two products in Option A.** You select this row by clicking 'Preferred Option B' in the column at the end of the row.

Option A		Option B		Preferred Option	
Flexible Account (account balance)	**Lifetime Guaranteed Income** (per year, including Age Pension)	**Flexible Account** (account balance)	**Lifetime Guaranteed Income** (per year, including Age Pension)	Option A	Option B
$0	$38,980	$32,046	$36,193	○	○
$0	$38,980	$45,320	$36,193	○	○
$0	$38,980	$64,092	$36,193	○	○
$0	$38,980	$90,640	$36,193	○	○
$0	$38,980	$128,184	$36,193	○	○

Retirement Calculator

--- Please make a selection above to activate the Retirement Calculator ---

>>

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Task 1 of 6

Recall the general product features:

- **Lifetime Guaranteed Income Product**: This product provides guaranteed **income** for your regular **expenses** for as long as you and your partner live, even if you or your partner live longer than expected. The **more** you buy of this product the **more** you have for regular **expenditures** for the rest of your life.
- **Flexible Account Product**: This product allows you to choose you and your partner's **income** level depending on your **expenses**. If the account balance is **sufficient** you will be able to pay for unexpected **expenses** while maintaining the same standard of living. The **more** you buy of this product the **higher** the flexibility you will have to match your **expenditures**.

Imagine that you are at retirement and you have retirement savings to allocate between the **Lifetime Guaranteed Income Product** and the **Flexible Account Product**. All options are ***after tax*** and ***include public pension payments***. In the event that you or your partner dies the **Lifetime Guaranteed Income** will be reduced by one third.

Now suppose you had the following choice:

- **Either Option A** - You **have $0** in your Flexible Account and you would receive a Lifetime Guaranteed Income of **$38,980** per year, for life
- **Or Option B** - You **have some amount** in your Flexible Account and you would receive a Lifetime Guaranteed Income of **$36,193** per year, for life

What we would like you to do is to cast your eye down the rows of the table and **select the FIRST ROW for which you prefer the combination of the two products in Option B to the combination of the two products in Option A.** You select this row by clicking 'Preferred Option B' in the column at the end of the row.

Option A		Option B		Preferred Option	
Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Option A	Option B
$0	$38,980	$32,046	$36,193	◉	○
$0	$38,980	$45,320	$36,193	◉	○
$0	$38,980	$64,092	$36,193	◉	○
$0	$38,980	$90,640	$36,193	○	◉
$0	$38,980	$128,184	$36,193	○	◉

*This implies that you prefer Option B (**$90,640** in the Flexible Account and a Lifetime Guaranteed Income of **$36,193** per year) to Option A (**$0** in the Flexible Account and a Lifetime Guaranteed Income of **$38,980** per year).*

*BUT you prefer Option A (**$0** in the Flexible Account and Lifetime Guaranteed Income of **$38,980** per year) to Option B (**$64,092** in the Flexible Account and a Lifetime Guaranteed Income of **$36,193** per year).*

Retirement Calculator

Option B refers to the FIRST ROW you prefer Option B to Option A.

	Option A		Option B	
	Both alive	Surviving spouse	Both alive	Surviving spouse
Income from ages 65 - 85	$38,980	$25,987	$40,040	$27,976
Income after age 85	$38,980	$25,987	$36,993	$24,929

The numbers in the table above are in today's dollars and calculated by assuming:

I would like to ensure the Flexible Account provides an income until age:	85
I would like to keep the following amount from the Flexible Account for inheritance or unexpected expenses:	$40,000
I would like to spend MORE of the Flexible Account in the first FIVE years of retirement:	○ Yes ◉ No
The Flexible Account provides an average annual return, greater than inflation by:	2%

Adjust the options above to see the effect it has on your choices in this task.

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Task 1 of 6

Please refine your choice. Cast your eye down the table and **select the FIRST ROW for which you prefer the combination of the two products in Option B to the combination of the two products in Option A**. You select this row by clicking "Preferred Option B" in the column at the end of the row.

Option A		Option B		Preferred Option	
Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Option A	Option B
$0	$38,980	$66,930	$36,193	○	○
$0	$38,980	$72,987	$36,193	○	○
$0	$38,980	$79,593	$36,193	○	○
$0	$38,980	$86,797	$36,193	○	○

Retirement Calculator

--- Please make a selection above to activate the Retirement Calculator ---

<< >>

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Task 1 of 6

Please refine your choice. Cast your eye down the table and **select the FIRST ROW for which you prefer the combination of the two products in Option B to the combination of the two products in Option A**. You select this row by clicking "Preferred Option B" in the column at the end of the row.

Option A		Option B		Preferred Option	
Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Flexible Account (account balance)	Lifetime Guaranteed Income (per year, including Age Pension)	Option A	Option B
$0	$38,980	$66,930	$36,193	◉	○
$0	$38,980	$72,987	$36,193	◉	○
$0	$38,980	$79,593	$36,193	○	◉
$0	$38,980	$86,797	$36,193	○	◉

*This implies that you prefer Option B (**$79,593** in the Flexible Account and a Lifetime Guaranteed Income of **$36,193** per year) to Option A (**$0** in the Flexible Account and a Lifetime Guaranteed Income of **$38,980** per year).*

*BUT you prefer Option A (**$0** in the Flexible Account and Lifetime Guaranteed Income of **$38,980** per year) to Option B (**$72,987** in the Flexible Account and a Lifetime Guaranteed Income of **$36,193** per year).*

Retirement Calculator

Option B refers to the FIRST ROW you prefer Option B to Option A.

	Option A		Option B	
	Both alive	Surviving spouse	Both alive	Surviving spouse
Income from ages 65 - 85	$38,980	$25,987	$39,375	$27,311
Income after age 85	$38,980	$25,987	$36,993	$24,929

The numbers in the table above are in today's dollars and calculated by assuming:

I would like to ensure the Flexible Account provides an income until age:	85
I would like to keep the following amount from the Flexible Account for inheritance or unexpected expenses:	$40,000
I would like to spend MORE of the Flexible Account in the first FIVE years of retirement:	○ Yes ◉ No
The Flexible Account provides an average annual return, greater than inflation by:	2%

Adjust the options above to see the effect it has on your choices in this task.

<< >>

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Review

1. Suppose you have $0 in your Flexible Account and a Lifetime Guaranteed Income of $38,980.

On a scale of 0 to 10 where 0 is very unlikely and 10 is very likely, how likely is it that you would reduce your Lifetime Guaranteed Income by $1,393 to receive an additional $32,046 in your Flexible Account?

Very unlikely										Very likely
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

2. Suppose you have $0 in your Flexible Account and a Lifetime Guaranteed Income of $38,980.

On a scale of 0 to 10 where 0 is very unlikely and 10 is very likely, how likely is it that you would reduce your Lifetime Guaranteed Income by $2,787 to receive an additional $90,640 in your Flexible Account?

Very unlikely										Very likely
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

3. Suppose you have $0 in your Flexible Account and a Lifetime Guaranteed Income of $38,980.

On a scale of 0 to 10 where 0 is very unlikely and 10 is very likely, how likely is it that you would reduce your Lifetime Guaranteed Income by $4,180 to receive an additional $96,138 in your Flexible Account?

Very unlikely										Very likely
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

4. Suppose you have $32,046 in your Flexible Account and a Lifetime Guaranteed Income of $37,587.

On a scale of 0 to 10 where 0 is very unlikely and 10 is very likely, how likely is it that you would reduce your Lifetime Guaranteed Income by $1,394 to receive an additional $32,046 in your Flexible Account?

Very unlikely										Very likely
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

5. Suppose you have $32,046 in your Flexible Account and a Lifetime Guaranteed Income of $37,587.

On a scale of 0 to 10 where 0 is very unlikely and 10 is very likely, how likely is it that you would reduce your Lifetime Guaranteed Income by $2,787 to receive an additional $90,640 in your Flexible Account?

Very unlikely										Very likely
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

6. Suppose you have $64,092 in your Flexible Account and a Lifetime Guaranteed Income of $36,193.

On a scale of 0 to 10 where 0 is very unlikely and 10 is very likely, how likely is it that you would reduce your Lifetime Guaranteed Income by $1,393 to receive an additional $32,046 in your Flexible Account?

Very unlikely										Very likely
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

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Section 2: Planning and personality traits

In this part of the survey we are going to ask you some questions about planning and your personality traits.

Planning Horizon

People use different time horizons when they decide how much of their income to spend, and how much to save. Which of the time horizons mentioned below is in your household MOST important with regard to planning expenditures and savings?

- The next fortnight/month
- The next couple of months
- The next year
- The next one to 5 years
- The next 5 to 10 years
- More than 10 years from now

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Retirement planning

Have you ever tried to work out how much you need to save for retirement?

- ○ Yes
- ○ No

Think about your knowledge of financial planning for retirement. Please indicate the extent with which you agree with the statements below using a scale from 1 to 7, where 1 means "strongly disagree" and 7 means "strongly agree". You can also use the values in-between to indicate where you fall on the scale.

1. I am very knowledgeable about financial planning for retirement

Strongly disagree — Strongly agree
1 2 3 4 5 6 7

2. I know more than most people about retirement planning.

Strongly disagree — Strongly agree
1 2 3 4 5 6 7

3. I am very confident in my ability to do retirement planning.

Strongly disagree — Strongly agree
1 2 3 4 5 6 7

4. When I have a need for financial services, I know exactly where to obtain information on what to do.

Strongly disagree — Strongly agree
1 2 3 4 5 6 7

5. I am knowledgeable about how the Age Pension works.

Strongly disagree — Strongly agree
1 2 3 4 5 6 7

6. I am knowledgeable about how voluntary superannuation works.

Strongly disagree — Strongly agree
1 2 3 4 5 6 7

On a scale from 1 (in the near future) to 7 (in the distant future), retirement will occur for me...

In the near future — In the distant future
1 2 3 4 5 6 7

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Future time perspective

Read the following statements and indicate the extent to which you agree using a scale from 1 to 7, where 1 means "strongly disagree" and 7 means "strongly agree". You can also use the values in-between to indicate where you fall on the scale.

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
I follow the advice to save for a rainy day.	○	○	○	○	○	○	○
I enjoy thinking about how I will live years from now in the future.	○	○	○	○	○	○	○
The distant future is too uncertain to plan for.	○	○	○	○	○	○	○
The future seems very vague and uncertain to me.	○	○	○	○	○	○	○
I pretty much live on a day-to-day basis.	○	○	○	○	○	○	○
I enjoy living for the moment and not knowing what tomorrow will bring.	○	○	○	○	○	○	○

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Subjective life expectancy

According to Australian Bureau of Statistics, Australian females at your age on average are expected to live to age 85, to what age do you think you will live?

Please select your answer ▾

How likely do you think it is that you will outlive your spouse or partner?

Very unlikely 0	1	2	3	4	5	6	7	8	9	Very likely 10
○	○	○	○	○	○	○	○	○	○	○

Health

How would you describe your health, generally speaking?

- ○ Poor
- ○ Moderate
- ○ Good
- ○ Very good
- ○ Excellent

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Time preference

How do you see yourself: Are you generally an impatient person or someone who always shows great patience?

Please tick one box on the scale where 0 means 'very impatient' and 10 means 'very patient'.

Very impatient										Very patient
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

Risk attitude

How do you see yourself: Are you generally a person who is fully prepared to take risks in financial matters or do you try to avoid taking risks in financial matters?

Please tick one box on the scale where 0 means 'not prepared to take risks in financial matters' and 10 means 'fully prepared to take risks in financial matters'.

Not prepared to take risks in financial matters										Fully prepared to take risks in financial matters
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

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Religion

What is your religion?

- ○ Roman Catholic
- ○ Protestant
- ○ Christian – Other
- ○ Islam
- ○ Buddhist
- ○ Other (Please specify:) _____
- ○ No religion

Personality traits

In these questions we ask you to describe your own personality traits and habits.

Please indicate how well each of the following describes you.

Please select one answer per row.

	A lot	Somewhat	A little	Not at all
Organised	○	○	○	○
Responsible	○	○	○	○
Hardworking	○	○	○	○
Careless	○	○	○	○
Thorough	○	○	○	○

Please tell us how often you do each of the following:

Please select one answer per row.

	Very often	Often	Sometimes	Rarely	Never	Don't know
Spend too much money	○	○	○	○	○	○
Buy things on impulse	○	○	○	○	○	○
Buy things you hadn't planned to buy	○	○	○	○	○	○
Buy things you don't really need	○	○	○	○	○	○

Here are a number of personality traits that may or may not apply to you.

Please tick one box on a scale of 1 to 7 to indicate the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
Extraverted, enthusiastic	○	○	○	○	○	○	○
Critical, quarrelsome	○	○	○	○	○	○	○
Dependable, self-disciplined	○	○	○	○	○	○	○
Anxious, easily upset	○	○	○	○	○	○	○
Open to new experiences, complex	○	○	○	○	○	○	○
Reserved, quiet	○	○	○	○	○	○	○
Sympathetic, warm	○	○	○	○	○	○	○
Disorganized, careless	○	○	○	○	○	○	○
Calm, emotionally stable	○	○	○	○	○	○	○
Conventional, uncreative	○	○	○	○	○	○	○

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Habit

The next few questions ask what you think about saving money. Please tick one box on the scale where 1 means 'strongly disagree' and 7 means 'strongly agree'.

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
Saving money is something I do frequently	○	○	○	○	○	○	○
Saving money is something I do automatically	○	○	○	○	○	○	○
Saving money is something I do without having to consciously remember	○	○	○	○	○	○	○
I feel uncomfortable if I don't make an effort to save	○	○	○	○	○	○	○
Saving money is something I do without thinking	○	○	○	○	○	○	○
Saving money is effortless for me	○	○	○	○	○	○	○
Saving money is something that belongs in my monthly routine	○	○	○	○	○	○	○
Saving money is something I start doing before I realize I'm doing it	○	○	○	○	○	○	○
I find it difficult to stop saving money	○	○	○	○	○	○	○
Saving money is something I have no need to think about doing	○	○	○	○	○	○	○
Saving money is something that's typically "me"	○	○	○	○	○	○	○
Saving money is something I have been doing for a long time	○	○	○	○	○	○	○

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Superannuation knowledge questions

This set of questions measure your baseline knowledge of the Australian superannuation system.

Is the following statement true or false?

"For most people, superannuation is taxed at a higher rate than a similar investment outside superannuation".

- ○ True
- ◉ False
- ○ Do not know

Can people make voluntary contributions to their superannuation accounts?

- ◉ Yes
- ○ No
- ○ Do not know

Are there any limits to the amount of these voluntary contributions?

- ○ No. There are no limits
- ○ No. There are no limits to the amount but contributions above the contributions caps are taxed at higher rates
- ○ Yes. Individuals cannot contribute in excess of the contribution caps
- ○ Do not know

If you have any superannuation, you will not qualify for the Age Pension.

- ○ True
- ○ False
- ○ Do not know

Do you know the minimum age at which you can spend the money in your superannuation account?

- ○ Yes
- ○ No

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Section 3: Superannuation arrangements and financial competence

In this part of the survey we will ask you questions about your superannuation arrangements and about your financial knowledge.

Superannuation arrangements

Do you have an account in a superannuation fund?

- (•) Yes
- ( ) No

Which type of superannuation account do you have?

Select all that apply.

- [x] A superannuation fund
- [x] A self-managed superannuation fund
- [ ] Do not know

Is your MAIN superannuation account in:

- ( ) A superannuation fund
- ( ) A self-managed superannuation fund
- ( ) Do not know

How would you describe your superannuation account?

If you have more than one account, think about your MAIN superannuation account.

- (•) Accumulation (also known as Defined Contribution)
- ( ) Defined Benefit
- ( ) Do not know

Think about ALL your superannuation accounts. Approximately how much do you have in each type of account? How much they have now or how much they will get when they retire?

Accumulation (also known as Defined Contribution)

Enter 0 if you do not have this type of account.

Accumulation (also known as Defined Contribution) account(s) $ __,___,___

Defined Benefit account

Enter 0 if you do not have this type of account

Defined Benefit account(s): Annual income $ __,___,___

Which type of contributions are CURRENTLY made to your account?

Select all that apply.

- [ ] Mandatory and/or employee (member) contributions
- [ ] Voluntary employee (member) contributions
- [ ] Do not know

Have you EVER made voluntary employee (member) contributions to your superannuation account?

- ( ) Yes
- ( ) No

What type of benefits can you take with your superannuation savings when you retire?

Select all that apply.

- [ ] Lifetime income (pension, annuity)
- [ ] Account-based pension
- [ ] Lump sum
- [ ] Do not know

At what age do you expect to retire (completely) from the paid workforce?

Enter age: ____

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Financial Literacy

On a scale of 1 to 7, where 1 means "very low" and 7 means "very high", how would you assess your understanding of finance?

Very Low			About average			Very high
1	2	3	4	5	6	7
○	○	○	○	○	○	○

Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

- ○ More than $102
- ○ Exactly $102
- ○ Less than $102
- ○ Do not know

Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

- ○ More than today
- ○ Exactly the same
- ○ Less than today
- ○ Do not know

Please evaluate whether this statement is true or false:

"Buying shares in a single company usually provides a safer return than buying units in a managed share fund".

- ○ True
- ○ False
- ○ Do not know

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Numeracy

Imagine that we rolled a fair, six-sided die 1,000 times. Out of 1,000 rolls, how many times do you think the die would come up even?

Please enter a number between 0 to 1000 in the box.

_____ times

In a lottery, the chance of winning a $500 prize is 1%. What is your best guess of how many people would win the prize if 1,000 people each buy a single ticket in the lottery?

Please enter a number between 0 to 1000 in the box.

_____ people

In a raffle, the chance of winning a car is 1 in 1,000. What percent of tickets in the raffle win a car?

Please enter a percentage.

_____ %

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Section 4: Demographics and personal characteristics

We will now ask you questions about your demographics and personal characteristics

Cultural background

In which country or continent were you born?

- Australia
- Western Europe or Scandinavia
- Southern Europe
- Europa (Other)
- Asia
- Africa
- North America
- South America
- Oceania (excluding Australia)

In which country or continent was your mother born?

- Australia
- Western Europe or Scandinavia
- Southern Europe
- Europa (Other)
- Asia
- Africa
- North America
- South America
- Oceania (excluding Australia)

In which country or continent was your father born?

- Australia
- Western Europe or Scandinavia
- Southern Europe
- Europa (Other)
- Asia
- Africa
- North America
- South America
- Oceania (excluding Australia)

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Financial decisions and support

Who is most responsible for the everyday financial decisions in your household?

- ○ I am
- ○ Someone else
- ○ Someone else and I are equally responsible

Who is most responsible for the major financial decisions in your household?

- ○ I am
- ○ Someone else
- ○ Someone else and I are equally responsible

How many people in your household do you fully or partially support financially?

- ○ 0 (I am being financially supported)
- ○ 1 (Myself)
- ○ 2
- ○ 3
- ○ 4 or more

How many children do you have?

▼

Which of the following statements best describes your thoughts on how you will spend your time in retirement?

Select one answer

- ○ I've just started to think about how I will spend my time in retirement but haven't made any decisions yet
- ○ I plan to spend a lot of my time travelling
- ○ I plan to take up more sport
- ○ I plan to take up a hobby
- ○ I plan to spend time taking care of other family members (ageing parents, grand kids)
- ○ I plan to spend most of my time doing voluntary work in the community
- ○ I haven't thought about it
- ○ Other (Please specify:)

When you ignore the purchase of a house or car, or other (big) investments, would you say the expenditures of your household, over the past 12 months, were higher than the income of the household, about equal to the income of the household, or lower than the income of the household?

- ○ My expenses were far greater than my income
- ○ My expenses were slightly greater than my income
- ○ My expenses and my income were about equal
- ○ My income was slightly greater than my expenses
- ○ My income was far greater than my expenses

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Education

What is the highest school qualification you have?

- ○ PhD
- ○ Bachelor Degree or Master Degree or equivalent
- ○ Certificate, Advanced Diploma and Diploma or above from TAFE or equivalent
- ○ High school
- ○ None of the above

Wealth

Assets: Your net wealth is calculated as what you own (your assets) LESS what you owe (your debts).

Your assets can include:

- (Cash and Fixed Interest) bank accounts, currency, CD's, notes.
- (Equities) shares, units in trust, mutual funds, warrants, convertibles, derivatives.
- (Private businesses) farms, family businesses, etc.

FOR THE PURPOSE OF THIS QUESTION, DO NOT INCLUDE SUPERANNUATION AND FAMILY HOME

Your debts can include:

- Outstanding credit card or store card balances
- Car loans, hire purchase agreements or other personal loans
- Loans to purchase investment properties or other investment loans (such as loans to buy financial assets or shares)
- Overdrafts or business loans
- Other loans (such as, amounts you borrowed from family or friends but excluding HECS/HELP)

Which of the four categories set out below best describes your net wealth EXCLUDING superannuation and family home - what you own (your assets EXCLUDING superannuation and family) LESS what you owe (your debts)?

- ○ Less than $0
- ○ Between $0 and $34,999
- ○ Between $35,000 and $104,999
- ○ More than $105,000

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Housing and bequests

The final set of questions in this survey will ask you about housing and bequests

Housing

Do you own your home, rent your home, or live in someone else's home?

- (•) Own and expect to have no mortgage when I retire
- ( ) Own and expect to still have a mortgage when I retire
- ( ) Rent
- ( ) Live with someone else

Do you plan to leave your home as a bequest?

- ( ) Yes
- ( ) Partly
- ( ) No
- ( ) Don't know

How important is it to you that your retirement savings are part of your estate in the event that you die young?

Not important at all										Very important
0	1	2	3	4	5	6	7	8	9	10
( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )

Bequests

Have you set aside a part of your wealth that you will definitely give away to family? Please only think about the amounts that you will certainly not use for your own retirement.

- (•) Yes
- ( ) No

Please specify the amount:

[ ]

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Clarity of the survey

How clear do you think the questions in this survey are?

Completely clear	Mostly Clear	Sometimes clear	Sometimes confusing	Mostly confusing	Completely confusing
1	2	3	4	5	6
( )	( )	( )	( )	( )	( )

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Thank you

You have earned a bonus of **$1.00** in panel points. Any bonus points earned will be credited to your account within 2-4 weeks.

This concludes the survey. Please provide any additional feedback about the survey you have just completed. Thank you for your time!

Please click the button on the bottom right to submit your responses.

Submit Responses