Essays on the economics of household finance and social insurance

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Chapter 2

The Demand for Retirement Products: The Role of Withdrawal Flexibility and Administrative Burden

Abstract

Many people save too little for retirement. In the Netherlands this especially concerns self-employed workers. This chapter studies – using a stated choice experiment – whether increasing withdrawal flexibility and decreasing the administrative burden can increase the demand for retirement products. We find that the self-employed are willing to give up 8% of post-retirement benefit for a lower administrative burden. In addition, they are willing to give up 14% in order to have the option to withdraw money in case of low income or for mortgage payments. Contrasting this, the willingness to pay (WTP) for flexibility and a lower administrative burden is remarkably lower for employees. Employees are willing to give up only 4% for flexible retirement products, and are not willing to pay for a lower administrative burden. Our results suggest that increasing flexibility and lowering the administra-

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tive burden for pension products can increase demand, especially for self-employed workers.

2.1 Introduction

In western countries a substantial fraction of workers has little retirement savings. This is particularly the case among the self-employed (OECD (2019a)). Under-savings primarily manifest through a relatively low amount of savings through annuities. In the literature this is called the annuity puzzle (Benartzi et al. (2011)). A recent literature has pointed towards the administrative burden — i.e., the effort it takes to look up information and fill out forms — and a lack of withdrawal flexibility as key explanations for low annuity take-up rates (see e.g., Galiani et al. (2020); Lusardi and Mitchell (2007)).[1]

In this paper we study to what extent more flexible pension products and a lower administrative burden can help to increase the demand for pension annuities. We use a stated choice experiment which allows us to estimate the willingness to pay (WTP) for flexibility and a reduced administrative burden using a large sample of Dutch workers. We implement flexibility through early withdrawal options from one's pension fund. The administrative burden is lowered by reducing the amount of financial information one has to provide to purchase a fiscally attractive pension annuity.

Throughout this paper we particularly focus on self-employed workers' demand for pension products. The reason for this is twofold. First, self-employed workers typically have lower retirement savings and less often retirement savings products. Zwinkels et al. (2017) show that, in the Netherlands, 43% of the self-employed are not able to replace 70% of their current income after retirement, while this is 31% for employees. This is likely to be at least partially caused by institutional differences. For example, employees are much more often covered by mandatory pension schemes. Second, both a lack of flexibility and the administrative burden may have a bigger impact on self-employed workers. The preference for flexibility may be higher among the self-employed because of their higher income volatility. Furthermore, self-employed may be more aware of the administrative burden involved with tax facilitated pension products, and the administrative burden

[1] Also the COVID-19 pandemic has emphasized the interest for retirement products with withdrawal flexibility. Several countries have introduced (temporarily) additional flexibility in retirement products. For example, in France independent self-employed workers facing financial difficulties can take up (at most) 800 dollars from their retirement accounts.

may be higher for them than for employees because of their higher income volatility. Therefore, providing products that are both more flexible and reduce the administrative burden on the worker may particularly increase product take up for the self-employed, and may help restore inequality in the pension accumulation of self-employed workers and employees.

Theoretical papers have extensively provided evidence on demand for a lower administrative burden and more withdrawal flexibility during the accumulation phase. Flexibility can increase contributions for people who prefer liquidity. Amador et al. (2006), Davidoff et al. (2005a) and Horneff et al. (2015) show that offering liquidity can be optimal and increases annuity take-up. On the other hand, flexibility (in the accumulation phase) can reduce retirement wealth because people withdraw their savings before retirement. We build upon Amromin and Smith (2003) who highlight a demand for the willingness to cover liquidity shocks, Beshears et al. (2014) who show that early money withdrawal options as well as framing increase annuity take-up rates, and Beshears et al. (2020) who show that there is demand for commitment (i.e. products with withdrawal penalties).

As a (possible) consequence of the COVID-19 pandemic there have been several (temporary) options of flexible and early withdrawals from pension funds. Bateman et al. (2023) and Wang-Ly and Newell (2022) examine an Australian early pension wealth withdrawal access option in Australia during the COVID-19 pandemic, revealing that individuals primarily withdraw retirement savings to alleviate income and liquidity constraints. Most of the early money withdrawals were performed by present-biased individuals, see Hamilton et al. (2023). Similar patterns emerge from a scheme implemented in Chile, as highlighted by Fuentes et al. (2023) showing that early money withdrawal options are primarily taken up by low-income workers. Moreover, Lorca (2021), Fuentes et al. (2023), and Madeira (2022) demonstrate the adverse impact of such options on retirement wealth, prompting delayed retirements. They also observe that individuals with low pre-withdrawal pension wealth are more inclined to opt for early withdrawals, potentially exacerbating the decline in overall savings. While the earlier mentioned papers study the impact of (temporary) products with flexibility features, they don't study the desirability

from a consumer's perspective. This is the first paper that estimates the WTP for flexible retirement products and products with reduced amounts of red tape. Note that offering pension products with a lower administrative burden and options for early money withdrawal — as we propose in our experiment — are currently not legally allowed in most developed countries including the Netherlands (Beshears et al. (2015)).

The key contributions of this paper to the literature are twofold. First, we estimate the willingness to pay for a lower administrative burden and the demand for flexibility in the accumulation phase, using a stated choice experiment. As far as we know, we are the first to distinguish between four types of withdrawal options: fined withdrawals for any reason (as in Beshears et al. (2020)), free withdrawals conditional on a low income level, withdrawals specifically for education and investment purposes, and withdrawals for mortgage down payments. These options have diverse characteristics: whereas retirement savings become liquid under the first option, mortgage down payments are still rather illiquid. Withdrawals in case of a low income help to smooth consumption over time, and education and investments may increase future income. Second, we distinguish between self-employed workers and employees, as the Netherlands are characterized by large institutional differences between these two groups (see also section 2 for an extensive discussion). We study heterogeneous results for different characteristics and circumstances of people to obtain a better understanding why flexibility and a low administrative burden are more important for some people than for others.

Our paper relates to a broad literature on the retirement-savings and annuity puzzle — which entails workers not annuitizing for retirement in spite of annuitization being optimal — and the potential solutions to this puzzle. One reason that people don't annuitize more is behavioral biases, see Benartzi and Thaler (2007a) and Thaler and Benartzi (2007a) for an overview. For instance, inertia Chetty et al. (2014); Bütler and Teppa (2007), procrastination Beshears et al. (2014), present bias (Linde (2019)), and a lack of skills Brown et al. (2017); Shu et al. (2016) and Galiani et al. (2020). In addition, workers with lower financial literacy annuitize less, see Lusardi and Mitchell (2007) and Hershey et al. (2017). Finally, preferences play a

role. For instance (unanticipated) health shocks may be a reason for a low annuitization rate, see e.g. Peijnenburg et al. (2017a), a preference to retire later (Parker and Rougier (2007); García et al. (2019)), and a preference for lower income during retirement (see Selin (2012) and Joulfaian (2018)). Framing (the text of) pension products have been successfully used to increase annuitization, see e.g. Agnew et al. (2008); Beshears et al. (2014); Brown, Kling et al. (2008). We contribute to this literature by studying how attributes of pension products affect the demand for these products.

Our main findings are the following. Self-employed workers have a WTP of 8% of post retirement benefit for not having to provide fiscal information in order to purchase a pension product, while employees have a WTP close to zero. The WTP for flexibility is on average much larger. The self-employed are willing to pay up to 14% of post retirement benefit. The WTP for withdrawing money in case of low income and for mortgage payments is the highest. Employees are also willing to pay for increased withdrawal flexibility, although less. Employees have a WTP of at most 4%. This difference in WTP for flexibility may be explained by a difference in income uncertainty. Our results imply that policy design matters for annuity take up. Lowering the administrative burden and allowing certain types of withdrawal flexibility can help increase the take-up of pension annuities and consequently alleviate elderly from poverty.

The rest of this paper is organized as follows. The next section describes the Dutch retirement system. Section 3 describes our empirical methodology. In section 4 we explain our stated choice experiment design. Section 5 discusses the data, followed by section 6 presenting and discussing results. Finally, section 7 concludes.

2.2 Institutional setting

This section describes how the Dutch retirement system is organized and how the system differs between employees and the self-employed. One can categorize three sources of retirement contributions in the Netherlands, the three pillars. The first pillar entails state-funded flat-rate benefits on a pay-as-you-go basis. These benefits are equal to 50% to 100% of the net minimum wage, dependent on one's living

situation (Dutch Law (2020)). Residents of the Netherlands accrue 2% of their state pension every year, for 50 years until reaching the statutory retirement age, irrespective of work history. Under current plans, the age of entitlement to state pension benefits will increase to 67 years in 2024, and thereafter it will be linked to the development of life expectancy.

The second pillar entails retirement benefits funded through one's employer. 90% of Dutch employees are mandatorily enrolled in such a pension plan. Most self-employed workers are not mandatorily enrolled in the second pillar. Though, they can save on a voluntary basis for at most ten years after quitting their job at their last employer. Most self-employed workers currently do not save in the second pillar. A consequence of the second pillar being employer-provided is that the self-employed typically do not have as many second pillar arrangements. One important feature of the second pillar is that contributions cannot be withdrawn before retirement.

The third pillar entails voluntary individual pension arrangements. As opposed to second pillar savings, third pillar pension contributions can be withdrawn after paying income tax and a 20% fine over the withdrawn amount. An exception to this fine exists when individuals become disabled. In this case, up to €40,000 can be withdrawn, with only income tax having to be paid over this amount.

The Dutch pension system attempts to encourage retirement savings in the second and third pillars by offering a tax deduction: Second and third pillar retirement contributions up to a certain threshold can be deducted from one's taxable income. Additionally, there is an unofficial fourth pillar. This fourth pillar consists of private possessions such as savings, stocks, and one's home.

The attributes of our products are embedded in the current Dutch system in the following way. Our administrative burden attribute simplifies the information that needs to be provided in order to purchase the annuity and receive a tax break from their respective second- and third pillar baselines. In the second pillar, the burden is reduced by not having to report one's income over the past three years. In the third pillar, workers have to compute their tax deductibility thresholds, which requires workers to look up their income over the past year. The flexibility component adds additional exemptions from paying the

fine that comes with early money withdrawals in the third pillar.

2.3 Data

This section provides an overview of the data used for the analysis and shows descriptive statistics. We created a survey and targeted individuals who worked at least 28 hours a week and were between 25 and 60 years old[2]. The hour criterion is chosen to solely measure effects for workers who participate substantially on the labor market and whose main source of income is from (self-)employment. The survey was then administered to a sample of self-employed workers and a sample of employees of about the same size. These restrictions leave us with 1,741 respondents, 822 self-employed workers and 919 employees (note that the self-employed are oversampled). The survey was conducted between May 20, 2020, and June 8, 2020.

Table 2.1 presents demographic characteristics of respondents. Respondents are on average 43 years old, 38% of the sample is female, nearly three out of four own of house, and nearly everyone works more than 32 hours a week. We see some minor differences between the self-employed workers and employees in terms of homeownership, hours worked and education level. There is a sizable difference in the fraction of female workers between the self-employed and employees. Only 26% of employees in our sample are female, while half of the self-employed workers are female. However, this difference matches fairly closely with the gender distribution of employees and self-employed workers conditional on working 28 hours a week or more, as found by Torre et al. (2019). They show that conditional on working at least 4 days a week, 48% of the SE are female. Other demographic characteristics in our sample also fairly closely match those found in Torre et al. (2019). Worth noting, however, is that 54% of our self-employed sample is highly educated whereas (unconditionally on hours worked) 47% of Dutch SE are highly educated according to Torre et al. (2019).

[2]The survey was administered by Kien Wizard. We asked Kien Wizard to administer our survey to 800 self-employed workers and 800 employees. The sample matches population averages of self-employed workers and employees fairly closely CBS (2020), though some differences arise as a result of us selecting on the basis of the full-time workers.

	Full sample		Self-employed		Employees		Diff
	Mean	SD	Mean	SD	Mean	SD	P-value
Age	43.06	9.96	44.20	9.84	42.04	9.95	0.00***
Female	0.38	0.48	0.50	0.50	0.26	0.44	0.00***
Homeowner	0.73	0.45	0.71	0.45	0.74	0.44	0.10
Works 32 or more hours a week	0.99	0.12	0.97	0.18	1.00	0.00	0.00***
Works 28 to 32 hours a week	0.01	0.12	0.03	0.18	0.00	0.00	0.00***
Low education level	0.12	0.32	0.09	0.29	0.14	0.34	0.00***
Intermediate education level	0.40	0.49	0.37	0.48	0.43	0.49	0.01**
High education level	0.49	0.50	0.54	0.50	0.44	0.50	0.00***
Observations	1741		822		919		1741

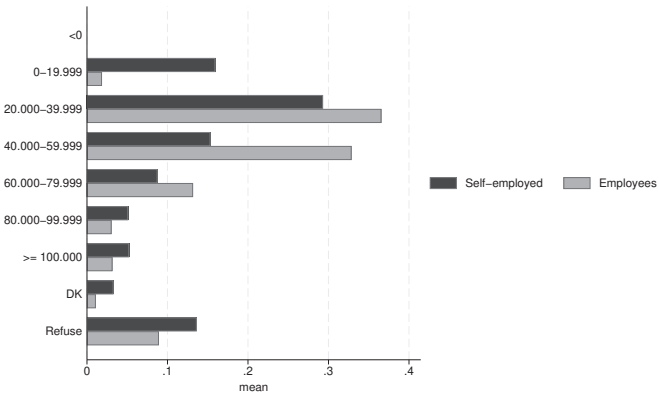
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2.1: Demographic characteristics of respondents. Diff compares self-employed workers to employees.

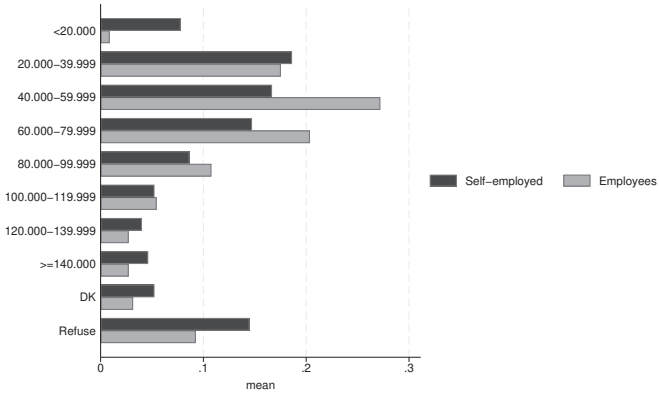
Figure 2.1 shows income and pension characteristics of our sample. Self-employed workers are over-represented in the tails of the income and liquidity distributions as compared to employees. Most self-employed respondents have personal incomes between €0 and €60.000, whereas most employees have incomes between €20,000 and €80,000. The pattern for household income is similar, though household incomes are somewhat larger than individual incomes, which indicates that most people also have a working spouse. Both groups have relatively few net liquid assets, see panel c. The self-employed also seem to not know and refuse to state their income and net liquid assets more often. This is in line with the fact that wages of the self-employed are typically more volatile and less predictable.

Table 2.2 shows anticipated income shocks of workers over the next 5 years as well as a result of the Covid-19 pandemic. As expected, self-employed workers anticipate much more income uncertainty than employees. Said income uncertainty may in turn lead this group to have a higher demand for liquidity.

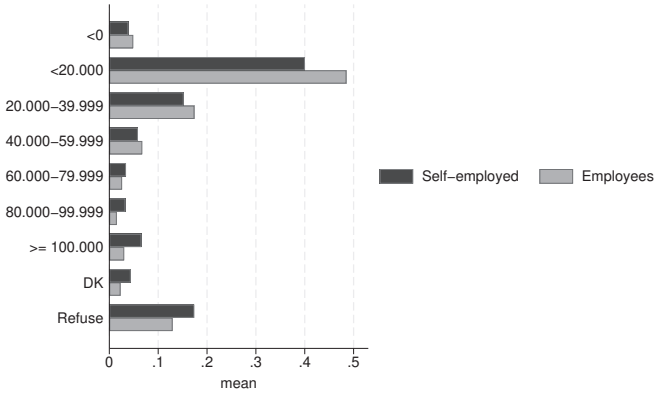
Table 2.2 also describes the preferences of workers for retirement savings. One fifth of our sample (strongly) wishes to save more for retirement than they are currently saving, this preference is similar for the self-employed workers and employees. Also roughly one in five reports to procrastinate the decision to save more for retirement.



(a) Personal income



(b) Household income



(c) Net liquid assets

Figure 2.1: The distribution of income and assets for self-employed and employees. DK denotes Don't know, refuse denotes respondent refused to answer the question.

	Full sample		Self-employed		Employees		Individual Diff	Joint Diff
	Mean	SD	Mean	SD	Mean	SD	P-value	P-value
Strongly wishes to save more for retirement	0.04	0.21	0.05	0.22	0.04	0.19	0.23	
Wishes to save more for retirement	0.15	0.36	0.12	0.33	0.18	0.39	0.00***	
Neutral with respect to saving more for retirement	0.33	0.47	0.30	0.46	0.36	0.48	0.02**	0.00***
Does not wish to save more for retirement	0.35	0.48	0.38	0.49	0.32	0.47	0.01**	
Strongly does not wish to save more for retirement	0.10	0.29	0.12	0.32	0.08	0.26	0.00***	
Does not know if wishes to save more for retirement	0.03	0.16	0.03	0.16	0.03	0.16	0.82	
Strongly disagrees with procrastinates retirement savings	0.06	0.23	0.06	0.23	0.04	0.19	0.48	
Disagrees with procrastinates retirement savings	0.13	0.33	0.12	0.33	0.14	0.35	0.66	
Neutral on procrastinates retirement savings	0.24	0.42	0.23	0.42	0.29	0.46	0.19	0.52
Agrees with procrastinates retirement savings	0.37	0.48	0.38	0.48	0.31	0.46	0.24	
Strongly agrees with procrastinates retirement savings	0.17	0.37	0.16	0.37	0.19	0.40	0.52	
Does not know if procrastinates retirement savings	0.05	0.22	0.05	0.22	0.03	0.16	0.30	
Strongly disagrees anticipated income fluctuations coming 5 years	0.16	0.37	0.04	0.20	0.28	0.45	0.00***	
Disagrees anticipated income fluctuations coming 5 years	0.32	0.47	0.21	0.41	0.42	0.49	0.00***	
Neutral anticipated income fluctuations coming 5 years	0.18	0.38	0.23	0.42	0.13	0.34	0.00***	0.00***
Agrees anticipated income fluctuations coming 5 years	0.23	0.42	0.35	0.48	0.12	0.33	0.00***	
Strongly agrees anticipated income fluctuations coming 5 years	0.09	0.29	0.14	0.35	0.05	0.21	0.00***	
No opinion on anticipated income fluctuations coming 5 years	0.01	0.11	0.02	0.14	0.01	0.07	0.00***	
Strongly disagrees income fluctuations due to covid	0.13	0.33	0.05	0.23	0.19	0.39	0.00***	
Disagrees income fluctuations due to covid	0.29	0.45	0.15	0.36	0.42	0.49	0.00***	
Neutral on income fluctuations due to covid	0.21	0.41	0.21	0.41	0.21	0.41	0.96	0.00***
Agrees income fluctuations due to covid	0.22	0.41	0.32	0.47	0.13	0.33	0.00***	
Strongly agrees income fluctuations due to covid	0.14	0.35	0.25	0.43	0.04	0.21	0.00***	
No opinion on income fluctuations due to covid	0.01	0.11	0.02	0.13	0.01	0.10	0.19	
Observations	1741		822		919		1741	1741

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2.2: Descriptive statistics: preferences for retirement savings. Diff compares self-employed workers to employees.

Table 2.3 shows preferences of respondents.[3] We find that a majority of respondents are risk-averse. Risk preferences vary little between self-employed workers and employees, with the majority of respondents being risk-averse. These risk-aversion related results are somewhat surprising, as self-employed workers are typically found to be less risk-averse than employees (S. Brown et al. (2006); Masclet et al. (2009)). Respondents overall choose safer gambles than in Dave et al. (2010), which likely stems from the fact that our games have higher stakes. Present-bias and discount factors are estimated following Wang et al. (2016). Most workers are present-biased, but there is no difference in present bias and the long-term discount factor between self-employed workers and employees. Both the degree of present bias and the long-term discount factor are similar to those found in Wang et al. (2016) for a sample of Dutch students. Most respondents have a bequest motive. On average, they would spend €2200 themselves if they would receive €3000, and more than €5100 if they would receive €9000. The bequest motives of self-employed workers and employees do not differ. Self-employed workers seem to have a slightly higher

[3]The exact questions we asked respondents to measure risk preference, present-bias and bequest motives can be found in Appendix A2.3.

subjective life expectancy, but this difference is not statistically significant. Trust in pension funds and insurers is overall neutral to negative. Finally, both self-employed workers and employees consider themselves fairly financially literate. Moreover, around 80% of the sample provided the correct answer to the question regarding inflation as described in Lusardi and Mitchell (2007). However, less than half of the sample correctly answered what annual fiscal contribution room entails, with self-employed workers providing the correct answer relatively more often.

	Full sample		Self-employed		Employees		Individual diff	Joint diff
	Mean	SD	Mean	SD	Mean	SD	P-value	P-value
Risk Preference								
RRA coefficient larger than 3.46	0.41	0.49	0.42	0.49	0.40	0.49	0.31	
RRA coefficient between 1.16 and 3.46	0.19	0.39	0.17	0.38	0.20	0.40	0.16	
RRA coefficient between 0.71 and 1.16	0.17	0.37	0.16	0.37	0.17	0.37	0.70	0.28
RRA coefficient between 0.5 and 0.71	0.08	0.28	0.07	0.26	0.09	0.29	0.20	
RRA coefficient between 0 and 0.5	0.06	0.24	0.06	0.24	0.06	0.24	0.70	
RRA coefficient smaller than 0	0.09	0.29	0.10	0.30	0.08	0.27	0.12	
Time preference								
Present-bias	0.91	0.23	0.91	0.24	0.91	0.23	0.95	
Long-term discount factor	0.91	0.08	0.91	0.08	0.91	0.08	0.75	
Life expectancy								
Probability live to 70	0.72	0.23	0.72	0.24	0.72	0.22	0.85	
Probability live to 80	0.52	0.26	0.53	0.28	0.51	0.25	0.20	0.00*
Probability live to 90	0.30	0.26	0.33	0.28	0.28	0.23	0.00***	
Bequest motives								
Amount spent when 3000 euros available	2174.56	811.23	2161.05	838.52	2186.64	786.27	0.51	0.56
Amount spent when 9000 euros available	5121.00	2874.03	5126.23	2956.18	5116.32	2800.12	0.94	
Financial literacy								
Perceived financial literacy (Score out of 10)	7.55	1.45	7.52	1.52	7.57	1.38	0.47	
Correct answer to financial literacy question	0.79	0.41	0.77	0.42	0.81	0.39	0.02**	
Correct answer annual contribution question	0.46	0.50	0.52	0.50	0.40	0.49	0.00***	
Pension funds and insurers								
Strongly distrusts pension funds and insurers	0.15	0.36	0.17	0.38	0.13	0.34	0.03**	
Distrusts pension funds and insurers	0.28	0.45	0.29	0.45	0.28	0.45	0.55	
Does not trust or distrust pension funds and insurers	0.37	0.48	0.36	0.48	0.37	0.48	0.82	0.00
Trusts pension funds and insurers	0.16	0.36	0.11	0.32	0.19	0.39	0.00***	
Strongly trusts pension funds and insurers	0.03	0.16	0.04	0.19	0.02	0.13	0.01***	
No opinion on trust in pension funds and insurers	0.02	0.14	0.03	0.17	0.01	0.12	0.04**	
Observations	1741		822		919		1741	1741

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2.3: Preferences and expectations of respondents. 1-year and 10-year discount rates are winsorized at the 5th and 95th percentile. Diff compares self-employed workers to employees.

Respondents are asked to fill in the probability that they buy a given product in each vignette. Some respondents are rounding all their answers by 5 or 10 percent. This rounding behavior is shown in Appendix A2.2. Table A2.2 shows the rounding patterns in our data. 24% of answers by self-employed workers are multiples of 5, 16% are multiples of 10, and 11% are multiples of 50. These percentages are lower among employees, at 20%, 11%, and 7%, respectively.

A potential concern is that respondents wish to purchase neither of

the retirement products in our first set of vignettes and that we hence falsely attribute the choice for either of the products to the willingness to purchase a product. To rule this concern out, table A2.2 shows — using the second set of vignettes — that only a small fraction indicates that they are not interested in purchasing an annuity.[4] This indicates that respondents are not averse to the hypothetical retirement products and may be interested in purchasing said products in practice.

2.4 Methodology

In this section, we describe how we estimate the WTP for more flexible retirement products with a lower administrative burden. Our estimation method closely follows Koşar et al. (2021). We assume that utility can be described with the following equation:

$$U_{ij} = B_j\alpha + F_j\beta + A_j\gamma + \xi_{ij} \tag{2.1}$$

Where U_{ij} denotes the utility of individual i for alternative j. B_j is a row vector with dummy variables describing the administrative burden of option j, F_j is a row vector with dummy variables describing the flexibility of option j, and A_j reflects the yearly annuity. α and β are vectors of preference parameters, and ξ_j is an idiosyncratic preference shock.

Individual i chooses retirement product j after observing the attributes $B_1, ..., B_J,\ F_1, ..., F_J,\ A_1, ..., A_J$ and $\xi_{i1}, ..., \xi_{iK}$. We assume that the ξ_i's are distributed i.i.d. Type I extreme value conditional on the attributes.

Respondent i is asked to report a probability of hypothetically choosing product j over product k. This can be written as:

$$Pr(U_{ij} > U_{ik}) = \frac{\exp(B_j\alpha + F_j\beta + A_j\gamma)}{\exp(B_j\alpha + F_j\beta + A_j\gamma) + \exp(B_k\alpha + F_k\beta + A_k\gamma)} \tag{2.2}$$

[4]Removing these responses from the data yields similar estimates.

From (2.2) we derive the following log odds ratio for product j as compared to product k:

$$\ln(\frac{p_{ij}}{p_{ik}}) = (B_j - B_k)\alpha + (F_j - F_k)\beta + (A_j - A_k)\gamma \ \forall \ j \neq k \quad (2.3)$$

As noted in the literature, survey respondents often round their subjective probabilities to multiples of 5% and 10% (Kleinjans and Soest (2014) and Manski (2004)). To take this into account we follow the literature and introduce measurement error into the model and estimate preferences using the least absolute deviations (LAD) estimator (e.g., Koşar et al. (2021)). Formally, we introduce this rounding behavior by assuming that our observed probabilities are measured with error such that:

$$\ln(\frac{\tilde{p_{ij}}}{\tilde{p_{ik}}}) = (B_j - B_k)\alpha + (F_j - F_k)\beta + (A_j - A_k)\gamma + \eta_{ijk} \ \forall \ j \neq k \quad (2.4)$$

where η_{ijk} captures (the difference in) measurement errors. Assuming that the distribution of η_{ijk} (conditional on B, F, and A) has a median of 0, this leads to the following median regression:

$$M[\ln(\frac{\tilde{p_{ij}}}{\tilde{p_{ik}}})|B, F, A] = (B_j - B_k)\alpha + (F_j - F_k)\beta + (A_j - A_k)\gamma \ \forall \ j \neq k \quad (2.5)$$

Median regression is more robust to outliers, and this is helpful for reported probabilities close to 0, which are often rounded to 0%.[5]

Quantile regression performs poorly when there are many (rounding-induced) tied values (Wilcox and Clark (2013)). We follow Machado and Silva (2005), by jittering our data to break the aforementioned ties. We adjust the choice probabilities of respondents who round all of their choice probabilities to multiples of 5% by a uniform distribution between -2.5% and 2.5% and the probabilities of respondents who round all of their probabilities to multiples of 10% (but not 5%)

[5]In our data, 12% of the answers have a corner solution of 0% and 9% of the answers have a corner solution of 100%. For estimation of (2.5), we convert choice probabilities of 0 to 0.001 and choice probabilities of 1 to 0.999, as log odds ratios for these values are undefined without this conversion.

by a uniform distribution between −5% and 5%. Note that adding this uniform noise does not violate the key identifying assumption of our model. Furthermore, different degrees of uniform noise as well as OLS yield roughly the same results as those presented in the results section.

2.5 Vignette design

This section describes the trade-offs respondents have to make in our stated choice experiment. Using sixteen vignettes, respondents are offered hypothetical retirement products that replace any pending pension contributions. To this end, we show two sets of eight vignettes.

In the first set of vignettes respondents choose between two hypothetical annuities. We ask respondents to assign probabilities of buying each product (replacing one's existing pension contributions) that sum up to 100% in each vignette. We explicitly make clear that these products replace any current retirement products that the respondent may have.

In the second set of vignettes we offer one product and have respondents assign a probability of buying said annuity, again making it explicitly clear that these products replace any current retirement products that the respondent may have. This approach allows us to identify whether demand for our hypothetical retirement products is present.

We prefer this two-step procedure over a design in which one has three options per vignette, where the third option is buying no product. That is because our procedure allows us to estimate the preference over two products, even for respondents who prefer not to buy any product.

Our products vary on three attribute levels. The administrative effort that is needed to purchase a tax facilitated pension annuity, i.e., the administrative burden, the flexibility to withdraw (part of) the funds early, and the price of the pension product which is expressed in the form of a yearly retirement annuity. The vignettes are constructed such that products with a lesser administrative burden and/or more early withdrawal options entail a lower annuity. An example of a vignette can be found in Appendix A2.1.

2.5.1 Attribute levels

2.5.2 Administrative Burden

We base the attribute levels on the existing retirement system. Our administrative burden attribute entails the administrative duties that the purchaser has to fulfill in order to purchase the product with tax breaks. For our baseline attribute levels, individuals do not have to provide any fiscal information to buy a product. For our second alternative one has to provide their income history over the past three years to purchase the product in question. This attribute is based on the second pillar of the Dutch retirement system[6]. For our last alternative, which is based on the current Dutch third pillar retirement system, individuals have to compute their annual contribution limit; the maximum amount of pension contributions one can deduct from their taxable income (Lusardi and Mitchell (2007)).

2.5.3 Flexibility

For flexibility, we use the status quo of not being able to withdraw savings as the base level, which is based on the current (lack of) flexibility in the second pillar. For the other four attribute levels, we introduce situations in which individuals can withdraw part of their pension contributions. The first alternative allows individuals to withdraw as many retirement contributions as they wish, albeit with a 20% early withdrawal penalty[7]. We additionally introduce three alternatives in which respondents are allowed to withdraw their contributions without any penalty in specific situations. These specific situations are chosen to introduce a commitment mechanism (Beshears et al. (2020)). The alternatives and their conditions are as follows:

- The second alternative allows individuals to supplement their income up to the minimum wage when their income falls below the minimum wage over a three-month period by withdrawing

[6]Note that these attribute levels measure whether making it less difficult to purchase a product increases product demand. We do not alter the fiscal stimulus that is behind the current system.

[7]This alternative is the third pillar status quo.

pension savings. We add this attribute level because the self-employed typically have more variable income than employees in addition to having a lower degree of social insurance to soften the effects of income shocks. This option helps to smooth consumption over the life cycle.

- Contrasting this, the third alternative instead allows individuals to withdraw €15,000 of their retirement savings every 5 years for investments in education and training. Note that employees are often compensated for education and training whereas the self-employed are not.[8]

- Finally, the fourth alternative allows individuals to withdraw up to €15,000 of their retirement savings every 5 years to pay off their mortgage. We introduce this attribute as the self-employed tend to save for retirement through the fourth pillar (Zwinkels et al. (2017)). Over the last decades, Dutch households have seen a strong growth in both their pension savings and their mortgage debts. It has often been argued that these long balance sheets have an amplifying effect on the cyclicality of the Dutch economy (Parlevliet et al. (2015)). That is because the longer balance sheets have made households more vulnerable to fluctuations in interest rates and asset prices. Furthermore, the growth of the mortgage portfolio has increased the financial risks for banks. When individuals are allowed to withdraw part of their retirement wealth to pay off their mortgage, this would shorten individual's balance sheets and reduce vulnerability. On the other hand wealth becomes somewhat more liquid, as people can sell their house.

2.5.4 Price

For the price we first compute an annuity based on a one-time retirement contribution of €1000. This annuity is based on investments in a portfolio of 50% in stocks and 50% government bonds, said portfolio creating an annual rate of return of 3.5% (Dijsselbloem et al. (2019)). To construct the annuity, the total value of the investments

[8]Note that all workers, including the self-employed, will have the option to receive up to €1000 from the government for educative ends as of March 2022 (Dutch Central Government (2021)).

at retirement are then divided by the discounted life expectation post retirement, discounted at 1% per year. This annuity then has continuous deviations ranging from -7.5% to 7.5% of the baseline annuity. The consequent annuity closely resembles annuities presently offered by Dutch private pension providers. The vignettes show respondents the yearly pension benefit they receive upon turning 67 in exchange for a one-time €1,000 contribution now.

2.5.5 Design Characteristics

We use Ngene[9] to translate the attribute levels into vignettes. We use a Bayesian Efficient design to estimate the WTP for flexibility and a lower administrative burden with as few observations as necessary. To this end, we set positive Bayesian priors on the reduced administrative burden, withdrawal options, and the post-retirement benefit.

The experiment's design contains 3 blocks with 8 vignettes each. Our sample consisting of 1,741 workers — 822 self-employed workers and 919 employees — are separately randomized into blocks. Subsequently, respondents are shown the 8 vignettes within their block in a randomized order. In addition, the order of the attribute levels shown is randomized per respondent.

Our stated choice experiment first shows the aforementioned 8 vignettes to respondents, asking them to assign probabilities to two hypothetical retirement products that must add up to 100%. The price is annuitized to an annual retirement benefit. This annuitization distributes the total discounted value of pension contributions over post-retirement life, conditional on survival probability. This is to say that the expected benefit payout equals the total retirement buildup when working. For post-retirement life, we discount using a 1% discount rate per year.

We also use eight randomly drawn (out of each set of products) hypothetical products from our vignettes. Respondents then assign a probability to buying these products as opposed to not buying a retirement product at all. This allows us to test whether respondents who stated to prefer a product would also actually consider buying that product.

[9] *ChoiceMetrics (2012) Ngene 1.1.1 User Manual Reference Guide, Australia* (2019)

Prior to showing the vignettes, we ask questions on background characteristics, financial literacy and whether respondents are presently building up retirement funds. After the vignettes, we ask questions regarding respondents' preferences. Respondents are asked how many hours a week they work, how long they have been self-employed, in which sector they work, individual and household income, their net liquid assets and whether they buy or rent their house.

We elicit risk and time preferences in addition to subjective life expectancy to tie into our flexibility attribute. We ask respondents for their choice in Dave et al. (2010)'s Eckel-Grossman gamble, albeit with the payouts multiplied by 10^{10}. Subsequently, respondents are asked to choose which payout in 1 or 10 years they want, and makes them indifferent between said payout and receiving €1000 in the present. For time preference, we follow Wang et al. (2016) by giving respondents a hypothetical choice between €1.000 now and €X in 1 and 10 years respectively, asking how large X should be such that respondents are indifferent between these two choices in both cases. From this, we compute both a long-term discount rate and present bias[11]. We ask for bequest motives by letting respondents allocate 3000 and 9000 euros respectively between themselves and their inheritance. Finally, we take the financial literacy questions from Lusardi and Mitchell (2007).[12]

2.6 Results

2.6.1 Main results

This section presents estimates of our LAD model. Table 2.4 shows that the demand for retirement products increases when the administrative burden is lower. The size of the effect is similar for both types of administrative burden. Notably, self-employed workers drive the entire effect. The self-employed have a demand that is 5% higher

[10]The Eckel-Grossman model assumes constant relative risk aversion.

[11]We compute long-term discount rates by showing respondents two hypothetical scenarios in which they receive €1000 now and €X in 1 and 10 years, respectively. with the resulting question of what value of X would make respondents indifferent between the two. From X, we compute both the 1-year and 10-year discount rates. We subsequently compute present bias by dividing the 10-year discount rate (scaled to its 1-year equivalent) by our observed 1-year discount rates. If the resulting number is smaller than 1, this indicates present bias.

[12]Note that we have translated all the questions and administered the entire survey in Dutch.

when not having to calculate their annual contribution limit and not having to provide their income history. The employees on the other hand do not have a demand for a lower administrative burden. This can be explained by the higher complexity of the calculations needed for the self-employed workers. In other words, the current administrative burden is larger for the self-employed. Taking this burden away increases the demand for retirement products.

We see a strong demand for flexibility. Being able to withdraw funds in case of a below minimum wage income and in to pay off a mortgage increases demand strongly. This holds for both the group of self-employed workers and employees. Self-employed workers also reveal a sizeable demand for the opportunity to withdraw funds for investment in e.g., schooling. Workers do not have such a demand. A possible explanation for this is that most training and education taken up by workers is paid for by their employer. Neither self-employed workers nor employees show any demand for the option to withdraw income with a fiscal penalty. Finally, as expected, demand increases when benefits are higher conditional on the administrative burden and flexibility attribute levels.

Our results contrast Thaler and Benartzi (2007a): Only self-employed workers, for whom it is typically much more difficult to compute their fiscal information, have a WTP for administrative burden. In addition to being in line with earlier literature on the demand for early money withdrawal options as in Amromin and Smith (2003) and Beshears et al. (2014), our results highlight that workers with uncertain fiscal positions are willing to give up a substantial amount of their retirement benefits for early money withdrawal options. Furthermore, the aversion towards withdrawing with a fiscal penalty provides further evidence for a desire to commitment, as found by Beshears et al. (2020). Withdrawal penalties make respondents less likely to buy retirement products: Respondents prefer products that do not entail fiscal penalties but are tied to certain conditions for early money withdrawal instead.

Although the jittering procedure applied to the data should not affect estimates in expectation, a concern nonetheless remains regarding altering the data. To test whether our results are robust to the jittering applied to the choice probabilities, we repeat our LAD estimates

with different amounts of noise applied to the choice probabilities. Appendix A2.5 shows that halving or doubling the amount of noise we jitter the data with does not change the sign or the rough order of magnitude of our estimates.

VARIABLES	(1) Full sample	(2) Self-employed	(3) Employees
Benefit deviation %	0.0251***	0.00671***	0.0504***
	(0.00250)	(0.00176)	(0.00454)
Compute annual contribution limit	-0.0612***	-0.0545***	-0.00768
	(0.0121)	(0.0159)	(0.0265)
Provide income history	-0.0638***	-0.0511***	-0.0309
	(0.0144)	(0.0164)	(0.0293)
Withdraw with penalty	-0.0146	-0.000695	-0.180***
	(0.0174)	(0.0224)	(0.0434)
Withdraw low income	0.168***	0.0943***	0.174***
	(0.0217)	(0.0227)	(0.0368)
Withdraw for investments	0.0993***	0.0793***	-0.0866**
	(0.0176)	(0.0193)	(0.0344)
Withdraw for mortgage	0.228***	0.0947***	0.236***
	(0.0236)	(0.0243)	(0.0463)
Constant	0.00919	0.00531	0.0564***
	(0.00851)	(0.0103)	(0.0200)
Observations	27,856	13,152	14,704
R-squared	0.019	0.015	0.039

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2.4: LAD estimates. Standard errors are clustered at the individual level and in parentheses. Reference categories are a benefit deviation of 0, not having to provide any financial information, and not being able to withdraw contributions.

Table 2.5 shows the WTPs for product attributes as compared to a baseline of not having to provide fiscal information (the smallest administrative burden) and not being able to withdraw contributions respectively. We find an overall WTP of -2.5% of the post-retirement annuity for having to compute one's annual contribution limit and having to provide one's income history in the full sample. This means that respondents are willing to give up 2.5% of their post-retirement benefit in order to avoid having to compute one's own annual contribution limit or to provide one's income history. Dividing estimates based

on whether respondents are self-employed shows that the entire effect is driven by the self-employed. self-employed workers have a WTP of 8%, while the WTP for employees is a quite precisely estimated 0%.

A likely explanation for this finding is that it is more difficult for self-employed workers to find out their past income than for employees. Payrolls are often stored by the employer for employees whereas self-employed workers typically have more uncertain incomes from multiple sources.

We find positive WTPs for flexibility, with the exception of the option to withdraw money with a fiscal penalty, for which the WTP is not significantly different from zero. For employees WTP estimates for early money withdrawal options with a fiscal penalty are even negative. This discovery reveals that some employees like commitment more than flexibility in the form of options to withdraw money with a penalty. This result is in line with Beshears et al. (2020), who find — using an online experiment — that some people prefer saving accounts with high withdrawal penalties over accounts with lower withdrawal penalties. This indicates that part of their respondents are partially or fully sophisticated present biased agents.

Among self-employed workers, a WTP of approximately 14% of the annuity is found for the option to withdraw when income is low and for mortgage payments. Likewise, self-employed workers are willing to give up 12% of their retirement benefits for the option to withdraw for investments. Among employees, WTPs of 3.5% and 4.5% of one's post-retirement annuity is found for the option to withdraw money when income is low and to withdraw money for mortgage payments, respectively. As such, both self-employed workers and employees have demand for more flexible retirement products, but the effect is much more pronounced for self-employed workers.

These results with respect to flexibility may be driven by self-employed workers facing larger income shocks than employees. As such, the option to supplement income or reduce one's mortgage is likely more valuable for self-employed respondents. This explanation is further compounded by the self-employed workers in our sample generally being risk-averse. For investments, self-employed workers being responsible for their own training may explain why self-employed workers have a positive WTP for investment-related with-

drawals whereas employees do not.

	(1) Full sample	(2) Self-employed	(3) Employees
Compute annual contribution limit	-2.443***	-8.121**	-0.152
	(0.545)	(2.972)	(0.526)
Provide income history	-2.545***	-7.625**	-0.612
	(0.576)	(2.785)	(0.580)
Withdraw with penalty	-0.583	-0.104	-3.579***
	(0.711)	(3.348)	(0.904)
Withdraw low income	6.721***	14.06***	3.456***
	(0.689)	(4.236)	(0.711)
Withdraw for investments	3.962***	11.82**	-1.717*
	(0.619)	(3.747)	(0.707)
Withdraw for mortgage	9.101***	14.12***	4.681***
	(0.788)	(4.050)	(0.829)
Observations	27856	13152	14704

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2.5: WTP estimates measured as a percentage of the post-retirement annuity. Standard errors are clustered at the individual level and in parentheses. WTPs are relative to a pension annuity which does not require any fiscal information to purchase and has no early money withdrawal options.

2.6.2 Heterogeneity

In order to better understand what drives the differences in demand for retirement products — in particular, between the self-employed and workers — we now estimate heterogeneous effects with respect to demographic characteristics, financial position, and preferences.

Table 2.6 shows the WTPs separated by demographic characteristics. Younger and older workers exhibit similar WTPs for all product attributes. Comparing men and women shows that women have much larger WTPs for reducing the administrative burden, withdrawing when income is low and withdrawing for mortgage payments. These effects may be driven by our self-employed respondents having a larger share of women.

Finally, renters have much larger WTPs for not having to provide fiscal information as well as low-income withdrawals and mortgage payment withdrawals than homeowners, though WTPs for renters are imprecisely estimated. Renters in our sample generally have less income, are less financially literate, and have fewer net liquid assets. With the increasing housing prices it has become difficult for renters to buy a house. Early withdrawal options may help renters purchase a house.

Table 2.7 shows the WTPs separated by respondents' financial position. As expected, low-income respondents have a much higher WTP for the option to withdraw money when income is low than high-income respondents. Low-income respondents also have a stronger distaste for having to provide fiscal information and a more pronounced taste for investment-related withdrawals. A similar pattern with respect to the flexibility attributes holds when comparing low and-high liquidity workers. A potential explanation for these findings is that low income and-liquidity workers are more affected by financial shocks. Workers who saved for retirement in 2019 have higher WTPs for all attributes except withdrawing with a fiscal penalty. Workers who want to save more for retirement have more pronounced WTPs than workers who do not. Surprisingly, WTPs for flexibility among workers who anticipate income fluctuations do not significantly differ from those for workers who do not anticipate income fluctuations. Moreover, respondents who are uncertain about their income as a result of Covid-19 for early money withdrawal options have larger WTPs than those who are not.

Table 2.8 shows the WTPs separated by preferences of respondents. Risk-averse workers have a higher WTP to reduce investment-related withdrawals than workers with low risk aversion, whereas other WTPs are similar. Present-biased respondents as well as respondents with a high discount rate have stronger distastes for having to provide fiscal information and exhibit higher WTPs for low-income, investment-related and mortgage-related withdrawals. Respondents with a self-assessed probability to live to 80 or older are more interested in investment-related withdrawals, but otherwise do not differ substantially from those with a low perceived probability of living to 80 or older. Workers who distrust pension funds have a higher WTP

for investment-related withdrawals. Finally, estimates on the basis of annual contribution room are too imprecisely estimated to conclude any differences between the groups.

	(1) Younger	(2) Older	(3) Male	(4) Female	(5) Renter	(6) Home owner
Compute annual contribution limit	-2.311**	-2.481	-1.155*	-8.498	-12.80*	-2.954***
	(0.814)	(1.825)	(0.532)	(4.605)	(5.102)	(0.713)
Provide income history	-1.986**	-2.987	-1.618***	-7.310	-7.883*	-1.919**
	(0.723)	(1.726)	(0.487)	(4.067)	(3.682)	(0.602)
Withdraw with penalty	-1.891	-2.675	-1.703*	-6.851	-0.616	-1.705*
	(1.026)	(2.631)	(0.757)	(5.661)	(4.533)	(0.836)
Withdraw low income	5.170***	7.014**	3.622***	14.66*	19.75**	5.354***
	(0.943)	(2.484)	(0.678)	(6.451)	(6.286)	(0.721)
Withdraw for investments	3.856***	2.476	1.151	9.782	12.61*	1.897**
	(0.950)	(2.087)	(0.777)	(5.430)	(5.156)	(0.723)
Withdraw for mortgage	8.229***	7.779**	5.525***	14.31*	15.72**	8.803***
	(1.146)	(2.584)	(0.828)	(5.999)	(5.347)	(0.887)
Observations	11888	15968	17392	10464	7296	20272

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2.6: WTP estimates measured as a percentage of the post-retirement annuity separated by demographic characteristics. Standard errors are clustered at the individual level and in parentheses. Younger and older defined as age between 25 and 40 and age between 41 and 60 respectively. WTPs are relative to a pension annuity which does not require any fiscal information to purchase and has no early money withdrawal options.

	(1) Lowincome	(2) Highincome	(3) Low liquidity	(4) High liquidity	(5) Nosave	(6) Save	(7) Nosavemore	(8) Savemore	(9) Nocovid	(10) Covid	(11) Incomefluc	(12) Noincomefluc
Compute annual contribution limit	-3.050*	-1.853**	-2.295**	-1.290	-0.991	-10.73*	-2.887*	-3.098***	-1.806**	-2.879	-5.179*	-4.255
	(1.260)	(0.713)	(0.859)	(0.665)	(0.554)	(4.687)	(1.142)	(0.750)	(0.669)	(2.002)	(2.244)	(2.779)
Provide income history	-4.580***	-0.617	-1.513	-1.745**	-1.045*	-7.943*	-0.997	-2.867***	-1.269	-3.588	-6.198**	-6.281*
	(1.332)	(0.617)	(0.819)	(0.665)	(0.515)	(3.904)	(1.267)	(0.651)	(0.715)	(1.990)	(2.090)	(3.040)
Withdraw with penalty	-1.269	-2.676**	-1.451	-1.803	-2.336**	-5.259	-4.825*	-0.901	-3.868***	-4.229	0.509	-0.0802
	(1.827)	(0.851)	(1.047)	(0.978)	(0.762)	(5.075)	(2.096)	(0.885)	(1.050)	(2.999)	(2.814)	(3.880)
Withdraw low income	8.350***	3.494***	7.638***	3.425***	3.622***	16.70**	3.389**	6.956***	3.438***	7.896**	11.31***	11.44**
	(1.815)	(0.787)	(1.087)	(0.835)	(0.727)	(6.335)	(1.244)	(0.818)	(0.801)	(2.837)	(3.158)	(4.257)
Withdraw for investments	4.569**	1.174	4.277***	1.506	-0.0555	11.77*	-1.691	5.081***	-1.179	6.116*	11.09***	9.723*
	(1.588)	(0.718)	(0.961)	(0.777)	(0.774)	(5.140)	(1.467)	(0.888)	(0.811)	(2.537)	(3.156)	(3.999)
Withdraw for mortgage	8.396***	6.905***	9.564***	6.209***	5.361***	16.10**	6.317***	9.564***	6.571***	9.101**	11.48***	11.09**
	(1.840)	(1.005)	(1.219)	(1.062)	(0.862)	(5.882)	(1.461)	(0.974)	(0.923)	(2.917)	(3.226)	(3.987)
Observations	12368	10928	13632	10032	17792	10064	5504	21632	11616	15872	9360	14320

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2.7: WTP estimates measured as a percentage of the post-retirement annuity separated by income and pension characteristics. Standard errors are clustered at the individual level and in parentheses. Low (High) income is defined as household income being less than (equal to or more than €60,000. Low (High) liquidity defined as less than (equal to or more than) €20,000. (No)Save defined as whether someone saved (did not save) for retirement in 2019. (No)savemore defined as answering neutrally or positively (negatively) to whether respondent wants to save more for retirement. (Dis)Trustspensionfunds defined as answering neutrally or positively (negatively) to question whether one trusts pension funds. (No)Covid defined as answering neutrally or positively (negatively) whether the Covid-19 pandemic makes the respondent's income uncertain. (No)Incomefluc defined as answering neutrally or positively (negatively) whether the respondent anticipates income fluctuations over the next 5 years. WTPs are relative to a pension annuity which does not require any fiscal information to purchase and has no early money withdrawal options.

	(1) Lowrisk	(2) Highrisk	(3) Timeconsistent	(4) Presentbiased	(5) Lowdiscount	(6) Highdiscount	(7) Lowprob80	(8) Highprob80	(9) Trust	(10) Distrust	(11) AnnualContribution	(12) NoAnnualContribution
Compute annual contribution limit	-2.500***	-2.054	-1.650**	-2.982*	-1.225*	-4.384**	-1.572	-2.936***	-0.981	-3.203***	-0.651	-4.175
	(0.711)	(1.926)	(0.613)	(1.185)	(0.568)	(1.370)	(2.116)	(0.731)	(1.721)	(0.761)	(0.553)	(3.454)
Provide income history	-1.649*	-3.912*	-1.358*	-4.721***	-1.067	-4.350***	-2.681	-1.258	-3.421	-1.960**	-1.353	-3.539
	(0.665)	(1.852)	(0.640)	(1.193)	(0.650)	(1.267)	(1.904)	(0.754)	(1.812)	(0.654)	(0.700)	(3.007)
Withdraw with penalty	-2.312**	1.188	-1.705	-1.510	-1.946*	-3.626*	-3.321	-2.546*	-19.69***	0.703	-1.902*	-3.626
	(0.897)	(2.713)	(0.903)	(1.560)	(0.916)	(1.731)	(3.007)	(1.087)	(5.901)	(0.750)	(0.905)	(4.485)
Withdraw low income	6.153***	7.217**	5.354***	10.01***	5.348***	7.684***	7.312*	5.510***	8.828***	5.145***	5.970***	5.872
	(0.774)	(2.529)	(0.801)	(1.637)	(0.824)	(1.510)	(3.024)	(0.840)	(2.625)	(0.723)	(0.793)	(4.358)
Withdraw for investments	3.935***	3.338	1.703*	5.756***	1.220	7.774***	2.134	4.277***	1.686	4.277***	1.677*	5.622
	(0.744)	(2.140)	(0.789)	(1.347)	(0.767)	(1.569)	(2.457)	(0.804)	(2.019)	(0.830)	(0.717)	(3.902)
Withdraw for mortgage	8.832***	8.865***	6.892***	11.44***	6.458***	11.71***	8.048**	8.923***	8.286**	9.092***	6.687***	10.37*
	(0.903)	(2.573)	(1.020)	(1.696)	(0.986)	(1.745)	(3.091)	(0.989)	(2.529)	(1.021)	(0.901)	(4.826)
Observations	21280	6576	18560	9296	18112	9744	14736	13120	12048	15296	12832	15024

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2.8: WTP estimates measured as a percentage of the post-retirement annuity separated by personal preferences. Standard errors are clustered at the individual level and in parentheses. Low risk defined as a relative risk aversion coefficient between 1.16 and 3.46 ($-\infty$ and 1.16). Presentbiased (Timeconsistent) defined as a hyperbolic discounting parameter of less than (more than) 0.9. Lowdiscount (Highdiscount) defined as a discount factor of more than (less than) 0.9. Lowprob80 (Highprob80) defined as 50% or less (more than 50%) perceived probability of living to 80. Trust in pension funds measured for in both pension funds and private insurers. AnnualContribution defined as answering correctly when asked what the annual contribution limit is, NoAnnualContribution defined as answering incorrectly when asked what the annual contribution limit is. WTPs are relative to a pension annuity which does not require any fiscal information to purchase and has no early money withdrawal options.

In order to investigate whether the role of demographic characteristics, preferences, and financial situation in the preferences for flexibility and a lower administrative burden differs for the self-employed as compared to employees, we do the heterogeneity analysis also for the group of self-employed workers separately. Tables A2.3, A2.4, A2.7 show that roughly similar heterogeneity patterns hold among the subsample of self-employed workers, albeit with higher standard errors: Present bias and high discount rates remain major factors in the demand for a lower administrative burden, whereas income fluctuations and liquidity remain major factors in the demand for early withdrawal options.

All in all, our results suggest certain groups have substantial WTPs for having to reduce the administrative burden. WTPs are more pronounced for self-employed workers but negligible for employees. These results may be driven by self-employed workers not having an employer-based income administration and several workplaces, as such making it more difficult for self-employed workers to provide fiscal information. For the option to withdraw retirement savings early, we find sizable effects for both self-employed workers, though the WTP is more pronounced for self-employed workers. Options to withdraw when income is low and to withdraw for mortgages are especially associated with large WTPs.

2.7 Conclusion

In this paper we study whether increasing flexibility in the accumulation phase and lowering the administrative burden can help increase the demand for pension annuities. Using a stated choice experiment, we compute the WTP for early withdrawal flexibility options and a lower administrative burden when purchasing retirement products. We focus on self-employed workers and compare their demand with a representative group of employees. To account for individual uncertainty in individuals' choices, we follow (Manski (2004)) in eliciting choice probabilities as opposed to purely discrete choice. To this end, we estimate the median WTP of respondents while accounting for tied values that may arise as a result of rounding. Furthermore, we offer single retirement products as opposed to choices between two retire-

ment products in half of our vignettes, as to take into account whether respondents are willing to buy retirement products in the first place.

We find that there is significant demand to lower the administrative burden for self-employed workers. Self-employed workers demand an 8% higher post-retirement benefit in exchange for having to provide fiscal information, be it having to compute one's tax-deductible retirement contribution or one's three-year income history whereas employees do not exhibit effects fairly close to zero with respect to having to provide fiscal information. To the contrary, employees are not willing to give up a higher post-retirement benefit in exchange for a lower administrative burden.

The WTP for flexibility attributes is more striking. Both the option to withdraw money contributions for one's mortgage and withdraw when income is low show significant and precisely estimated WTPs. For the option to withdraw money when income is low, WTP estimates range from 3% for employees to 14% of the post-retirement annuity for self-employed workers. For mortgage payments, these WTPs range from 5% to 14% of one's post-retirement annuity. For investments, a WTP of 12% of the post-retirement annuity is found for self-employed workers with small positive WTPs. A negative WTP for withdrawing with a penalty is found among employees, indicating that these workers wish for withdrawing to be tied to a condition rather than being free to do so.

There is a substantial heterogeneity in WTPs among other groups. Workers who distrust pension funds, as well as workers who are present biased and/or have high discount rates have high WTPs for a lower administrative burden. Respondents with few savings, younger respondents and homeowners in particular have a strong demand for liquidity. The WTP to withdraw when income is low is strongly heterogeneous, with workers who have low incomes valuing this option most. Finally, present-biased respondents and respondents with high discount rates have much higher WTPs for early money withdrawal options than those who are not present-biased and have a low discount rate. One concern is that early money withdrawal options facilitate suboptimal choices especially for the former group. This concern is exacerbated by empirical evidence (e.g., Hamilton et al. (2023)) highlighting similar patterns.

In summary, this paper's results provide grounds to both lower the administrative burden required for saving for retirement and offer early money withdrawal options in exchange for a lower annuity. Both employees and self-employed workers stand to benefit from products that offer these characteristics, but effects are particularly pronounced for self-employed workers. Furthermore, our heterogeneity analysis can be used to inform policymakers how to increase retirement savings through annuities, especially for groups that need it the most. Specifically, since the self-employed and the lower income workers have a high WTP to reduce the administrative burden, one policy recommendation could be to abolish the need to provide financial information needed to purchase annuities for up to a certain amount per year. It is worth noting, however, that retirement savings also present tax deduction opportunities. Any reductions in red tape should be carefully designed to be compatible with these opportunities.

A2 Appendices

A2.1 Example of a vignette

Product	**A**	**B**
For every 1000-euro gross contribution you will receive this benefit from age 67 until you pass away:	€161 before taxes a year	€177 before taxes a year
To contribute money to this product:	You have to provide your taxable income over the past three years.	You do not need to provide any fiscal information.
Flexibility: some products allow for early money withdrawal.	You may withdraw up to 15.000 euros every 5 years for mortgage payments.	If your gross income over the past three months equals less than 5.000 euros, then you may supplement your gross income up to 5.000 euros by withdrawing pension contributions.

Figure A2.1: Example of a vignette

A2.2 Rounding and zero probabilities

	Self-employed Mean	Employees Mean
All probabilities multiples of 5%	0.24	0.20
All probabilities multiples of 10%	0.16	0.11
All probabilities multiples of 50%	0.11	0.07
Observations	13152	14704

Table A2.1: Rounding behavior of respondents

	Self-employed Mean	Employees Mean
Probability of zero to buy product A	0.13	0.09
Observations	6576	7352

Table A2.2: Probabilities of zero in second set of vignettes (before rounding adjustments)

A2.3 Risk preference, present-bias and bequest motive questions

Financial Literacy

On a scale from 1 to 10, how financially literate do you believe yourself to be?

- (Input integer ranging from 1 to 10)

Risk preference

Suppose we toss up a coin and you receive money depending on whether the coin lands on heads or tails.

	Game 1	Game 2	Game 3	Game 4	Game 5	Game 6
Payout if heads	€280	€240	€200	€160	€120	€20
Payout if tails	€280	€360	€440	€520	€600	€700

Welk game would you choose?

- o Game 1

Game 1
€280
€280

- o Game 2

Game 2
€240
€360

- o Game 3

Game 3
€200
€440

- o Game 4

Game 4
€160
€520

- o Game 5

Game 5
€120
€600

- o Game 6

Game 6
€20
€700

Time preference

Enter the amount for which option A and option B are equally appealing. Assume prices will not change from today's prices (no inflation)

- You receive €1,000 now
- You receive €[input] in 1 year

Enter the amount for which option A and option B are equally appealing. Assume prices will not change from today's prices (no inflation)

- You receive €1,000 now
- You receive €[input] in 10 years

Bequest motives

You will never face the following choices in real life. We still believe it interesting to know what you would do.

Suppose you're 80 years old. You are healthy and do not have any healthcare costs. You know you will suddenly die in one year.

Suppose you have a net income of €3,000 per month in your final year of life. Assume you have no other income sources or assets.

How much of this €3,000 would you spend yourself, and how much would you leave for inheritance every month?

- Spend: €[input] per month
- Leave for inheritance: €[input] per month

You will never face the following choices in real life. We still believe it interesting to know what you would do.

Suppose you're 80 years old. You are healthy and do not have any healthcare costs. You know you will suddenly die in one year.

you have a net income of €9,000 per month in your final year of life. Assume you have no other income sources or assets.

How much of this €9,000 would you spend yourself, and how much would you leave for inheritance every month?

- Spend: €[input] per month
- Leave for inheritance: €[input] per month

Trust in pension funds and insurers

Indicate to which degree you agree with the following statement:

I trust pension funds and insurers

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree
- Don't know / no opinion

A2.4 Heterogeneity among self-employed workers

	(1) Younger	(2) Older	(3) Male	(4) Female	(5) Renter	(6) Home owner
Compute annual contribution limit	-5.976	-8.497	-4.185*	-12.87	-28.48	-5.356**
	(3.219)	(5.679)	(1.667)	(9.878)	(20.83)	(1.805)
Provide income history	-8.001*	-7.417	-5.759**	-8.803	-14.63	-5.639***
	(3.137)	(5.072)	(1.801)	(7.527)	(11.60)	(1.647)
Withdraw with penalty	-4.963	0.914	1.046	-9.921	-5.434	-0.449
	(4.065)	(6.147)	(2.457)	(11.30)	(10.35)	(2.298)
Withdraw low income	11.68**	15.09	9.052***	19.71	54.42	8.748***
	(4.289)	(8.139)	(2.521)	(13.27)	(35.39)	(2.373)
Withdraw for investments	11.56**	10.60	8.720***	13.97	28.67	7.798***
	(4.077)	(6.584)	(2.333)	(10.29)	(19.97)	(2.147)
Withdraw for mortgage	14.76**	13.42	11.93***	16.60	21.38	13.08***
	(4.680)	(7.377)	(2.717)	(11.19)	(15.06)	(2.752)
Observations	5104	8048	6544	6608	3680	9328

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A2.3: Heterogeneity in demographic characteristics among self-employed workers.

	(1) Lowincome	(2) Highincome	(3) Low liquidity	(4) High liquidity	(5) Nosave	(6) Save	(7) Nosavemore	(8) Savemore	(9) Nocovid	(10) Covid	(11) Incomefluc	(12) Noincomefluc
Compute annual contribution limit	-11.47**	-3.273*	-12.38***	-3.769	-3.331	-13.87*	-11.38*	-8.857***	-6.854	-7.517*	-11.18***	-8.900
	(3.955)	(1.525)	(3.211)	(2.602)	(1.949)	(6.489)	(5.373)	(2.260)	(3.806)	(3.455)	(3.014)	(4.655)
Provide income history	-9.266**	-2.982*	-6.879**	-5.399*	-4.628*	-8.629	-4.737	-8.187***	-5.064	-7.947*	-9.844***	-9.330*
	(3.108)	(1.292)	(2.264)	(2.538)	(2.010)	(4.671)	(4.056)	(1.925)	(3.478)	(3.421)	(2.370)	(4.738)
Withdraw with penalty	1.846	0.0245	2.315	-0.641	0.628	-4.890	-9.488	0.161	-3.555	0.840	-0.885	-0.381
	(3.416)	(1.957)	(2.503)	(3.541)	(2.498)	(6.175)	(7.199)	(2.326)	(5.188)	(4.033)	(2.884)	(5.304)
Withdraw low income	19.25***	7.398***	20.32***	7.025*	7.217**	20.57*	1.328	15.09***	8.063	14.16**	14.52***	15.09*
	(5.495)	(1.986)	(4.898)	(3.295)	(2.638)	(8.642)	(4.189)	(2.974)	(4.888)	(5.068)	(3.531)	(6.706)
Withdraw for investments	13.25**	7.774***	14.27***	6.933*	7.495***	14.12*	0.502	12.66***	7.940	12.45**	14.40***	13.37*
	(4.376)	(1.869)	(3.573)	(3.208)	(2.260)	(6.683)	(4.319)	(2.613)	(4.214)	(4.657)	(3.390)	(6.185)
Withdraw for mortgage	16.60***	10.48***	18.86***	10.60**	9.564**	19.21*	8.894	14.94***	11.77*	13.82**	13.19***	14.27*
	(4.863)	(2.577)	(4.472)	(3.833)	(2.977)	(7.688)	(5.230)	(2.838)	(5.497)	(4.796)	(3.437)	(6.146)
Observations	5664	4720	5776	5088	4336	8816	2256	10544	2672	10256	6800	9840

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A2.4: Heterogeneity in pension characteristics among self-employed workers.

	(1) Lowrisk	(2) Highrisk	(3) Rational	(4) Naïve	(5) Lowdiscount	(6) Highdiscount	(7) Lowprob80	(8) Highprob80	(9) Trust	(10) Distrust	(11) AnnualContribution	(12) NoAnnualContribution
Compute annual contribution limit	-9.603***	-4.175	-7.261	-9.659***	-3.139	-12.04**	-7.521	-6.506**	-9.294	-5.810	-3.303*	-9.782
	(2.286)	(33.43)	(5.888)	(2.896)	(3.611)	(4.370)	(9.444)	(2.266)	(5.451)	(3.461)	(1.461)	(12.25)
Provide income history	-8.475***	-4.195	-6.163	-8.936***	-4.661	-10.13**	-8.187	-6.433**	-8.670	-5.824	-3.494**	-10.21
	(1.816)	(35.35)	(5.305)	(2.500)	(3.595)	(3.518)	(8.413)	(2.137)	(5.366)	(3.152)	(1.280)	(11.54)
Withdraw with penalty	-0.0242	-0.185	-0.0907	1.109	-0.652	0.672	1.285	-5.893	-30.39	2.623	-5.511*	2.623
	(2.123)	(53.38)	(6.897)	(2.927)	(5.468)	(3.210)	(10.39)	(3.194)	(17.56)	(3.699)	(2.361)	(11.06)
Withdraw low income	14.56***	11.44	8.802	19.70***	10.07	20.72**	14.52	11.67***	21.48*	9.608*	7.097***	18.21
	(2.825)	(53.61)	(7.353)	(4.588)	(5.552)	(6.403)	(14.31)	(2.709)	(9.795)	(4.291)	(1.698)	(18.07)
Withdraw for investments	12.60***	8.511	11.31	14.41***	7.473	15.76**	11.35	11.82***	12.15	10.36*	6.148***	15.14
	(2.610)	(43.08)	(7.734)	(3.688)	(4.889)	(5.026)	(12.32)	(2.614)	(7.167)	(4.323)	(1.551)	(15.99)
Withdraw for mortgage	14.59***	13.10	13.17	17.40***	9.736	20.06***	13.82	13.43***	17.90*	12.84**	9.383***	16.51
	(2.719)	(52.81)	(8.380)	(3.755)	(5.374)	(5.718)	(13.26)	(2.984)	(8.288)	(4.609)	(1.987)	(16.16)
Observations	9984	3168	8784	4368	8560	4592	6944	6208	6032	6848	6880	6272

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A2.5: Heterogeneity in demographic characteristics among self-employed workers.

A2.5 LAD estimates with varying uniform noise applied

VARIABLES	(1) Full sample	(2) Self-employed	(3) Employees
Benefit deviation %	0.0238***	0.00339**	0.0491***
	(0.00318)	(0.00168)	(0.00455)
Compute annual contribution limit	-0.0574***	-0.0277*	-0.00371
	(0.0123)	(0.0156)	(0.0256)
Provide income history	-0.0593***	-0.0260	-0.0334
	(0.0161)	(0.0162)	(0.0287)
Withdraw with penalty	-0.0141	-0.000751	-0.179***
	(0.0177)	(0.0224)	(0.0440)
Withdraw low income	0.162***	0.0478**	0.178***
	(0.0246)	(0.0220)	(0.0371)
Withdraw for investments	0.0936***	0.0401**	-0.0900***
	(0.0213)	(0.0186)	(0.0338)
Withdraw for mortgage	0.217***	0.0480**	0.238***
	(0.0274)	(0.0236)	(0.0450)
Constant	0.00792	0.00278	0.0606***
	(0.00881)	(0.0102)	(0.0197)
Observations	27,856	13,152	14,704
R-squared	0.019	0.015	0.038

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2.6: LAD estimates with half the uniform noise applied to rounders.

VARIABLES	(1) Full sample	(2) Self-employed	(3) Employees
Benefit deviation %	0.0282***	0.0119***	0.0500***
	(0.00243)	(0.00222)	(0.00437)
Compute annual contribution limit	-0.0665***	-0.0890***	-0.0137
	(0.0154)	(0.0204)	(0.0264)
Provide income history	-0.0704***	-0.0878***	-0.0314
	(0.0152)	(0.0188)	(0.0290)
Withdraw with penalty	-0.0355*	-0.00549	-0.191***
	(0.0203)	(0.0255)	(0.0419)
Withdraw low income	0.194***	0.166***	0.165***
	(0.0220)	(0.0270)	(0.0361)
Withdraw for investments	0.109***	0.141***	-0.0894***
	(0.0186)	(0.0256)	(0.0334)
Withdraw for mortgage	0.257***	0.164***	0.248***
	(0.0242)	(0.0293)	(0.0450)
Constant	0.00794	0.00578	0.0595***
	(0.00947)	(0.0115)	(0.0192)
Observations	27,856	13,152	14,704
R-squared	0.020	0.015	0.039

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2.7: LAD estimates with double the uniform noise applied to rounders.