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Experiment in the United Kingdom**

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ISSN: 2365-9793

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ABSTRACT

Trading Pay for Pensions: Evidence from a Discrete Choice Experiment in the United Kingdom*

This study estimates individuals' willingness to pay for pension benefits using a discrete choice experiment with fictitious job advertisements conducted among workers in the United Kingdom (UK). The results indicate that workers are willing to trade off current pay for additional pension benefits, with the marginal worker willing to forgo 0.3% of their current wage for a one percentage point increase in pension benefits. Willingness to pay varies significantly across individuals, increasing with proximity to retirement age, higher income levels, financial planning and financial literacy.

JEL Classification: C9, D9, J16, J32

Keywords: wage-pension trade-off, discrete choice experiment (DCE), United Kingdom

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* We thank seminar participants at University of Antwerp and KU Leuven, and conference participants at AASLE/SOLE/EALE 2025 conference in Toronto for valuable comments and discussions. Inés Guillemy acknowledges funding for this research from the Research Foundation Flanders, grant number: 11D5225N.

1 Introduction

In response to population ageing and the increasing pressure on public pension funds, countries around the world are shifting from pay-as-you-go retirement schemes towards investment-based schemes (Angelici et al., 2022; Westerhout et al., 2022). As the number of working individuals per retiree declines, workplace and personal private pension plans are becoming increasingly important and public pension provisions are being retrenched. Policies aimed at reducing public pensions and increasing pension savings, could have important implications for fiscal budgets, labour supply and demand, income inequality and financial well-being (Danzer & Dolton, 2012; Fuchsman et al., 2023; Scarfe et al., 2024). Under such conditions, workers face greater personal responsibility for securing their retirement income, which increases the role of individual preferences for future pension income. These policy changes may have unintended effects on worker’s financial wellbeing, if they have to bear the costs (Scarfe et al., 2024). This paper directly examines how much value individuals place on future pension benefits relative to current earnings, providing new evidence on the trade-offs people are willing to make today, for financial security in old age.

Despite the importance of retirement income for household wealth, very little is known about how individuals value these benefits compared to their wage (Cole & Taska, 2024; Haynes & Sessions, 2013; Nolan et al., 2019). While worker’s choice of job may reveal preferences for pension benefits and wages, the realised job matches also reflect firm’s preferences for workers (Cole & Taska, 2024; Sorkin, 2018; Wiswall & Zafar, 2018). In addition, both wages and pension benefits are correlated with unobserved worker and firm characteristics (Cole & Taska, 2024; Fitzpatrick, 2015). Workers with a high wage potential, are also receiving higher pensions (Fitzpatrick, 2015). Examining workers’ valuation of wages and pensions using job choice data may therefore return biased results.

To address these identification issues, this paper analyses worker’s preferences using a discrete choice experiment with fictitious job offers (Cole & Taska, 2024; Fuchsman et al., 2023; Kesternich et al., 2024). Our experiment was conducted among an online sample of workers in the UK using the Prolific platform. The job offers in our experiment differed on their offered wage and pension benefits, and respondents were asked to indicate their preferred choice several times. Pension benefits were introduced into the experiment by using different replacement rates granted for each job, making the hypothetical job offers as realistic as possible. We further examined the mechanisms behind workers’ valuation of retirement benefits, by taking into account possible explanatory variables such as financial literacy and numeracy, myopia and risk aversion.

We show that a large number of workers would choose a job offering higher pension benefits, even when that job offers a lower wage. Workers are on average willing to forego 0.3%

of their wage, for a one percentage point increase in future retirement income. Our results are mainly driven by older, high-income workers. In terms of the underlying mechanisms, we find that willingness-to-pay (WTP) is positively associated with financial planning, financial literacy and risk aversion.

Our paper contributes to the existing literature in two ways. First, our methodology is based on growing literature regarding the valuation of job amenities, such as Mas and Pal-lais (2017), Wiswall and Zafar (2018), He et al. (2021) and Maestas et al. (2023). While job flexibility, health benefits and remote work have been studied extensively, studies focusing on the valuation of pension benefits remain relatively scarce. In fact, there is very little understanding of how workers value pension benefits as a job amenity (Cole & Taska, 2024; Fuchsman et al., 2023). Moreover, most studies only focus on one aspect of pension benefits, or group of workers. For example, Cole and Taska (2024) focus on employer pensions in the United States, and Fuchsman et al. (2023) analyse teachers' preferences with respect to defined-contribution and defined-benefit retirement schemes. Using a discrete choice experiment with fictitious job offers, Kesternich et al. (2024) analyse whether workers' preferences for non-wage amenities changes when they are made aware how their choice of job might affect their future pension.

Next, we contribute to the existing literature by providing insights into the mechanisms behind worker's valuation of retirement benefits. We include in our analysis several explanatory factors such as financial literacy, financial planning and risk aversion. Furthermore, we also examine whether workers are heterogeneous in their preferences. This has important implications. We provide evidence that not all pension reforms affect workers equally. We show that older, high-income workers, would benefit more from a reduction in pay in return for pension benefits. In addition, while women, migrants and lower educated individuals typically hold less pension wealth they do not show significant differences in their valuation of current pay of future pension benefits. A reduction in pay, in return for pension benefits, would therefore mostly benefit high wage workers who are close to retirement. Second, one policy measure which has recently been introduced in the UK is automatic pension enrolment, which requires employers to register their employees in occupational pension plans. Since these plans impose costs on employers, they can translate into lower wages for workers (Bosch et al., 2022; Scarfe et al., 2024).

This paper is organised as follows. Section 2 provides an overview of the existing literature on the trade-off between wages and pensions. Section 3 provides a theoretical framework of the decision made by workers when choosing a job, taking into account different wages and pension packages. Section 4 describes our experimental setup, while Section 5 discusses the data collection and the empirical strategy. Section 6 presents the results of the paper, while

Section 7 concludes the paper.

2 Previous Literature

2.1 Wage-Pension Trade-Off

The classic theory of compensating wage differentials (Rosen, 1986) posits that individuals vary in their preferences for job amenities, such as flexible working schedules, relative to wages, and that these preferences influence job choices. For instance, valuing certain amenities at the expense of higher pay has been shown to contribute to the gender wage gap (Blau & Kahn, 2017; Sorkin, 2018; Wiswall & Zafar, 2018). By the same logic, workers differ in their preferences for pensions versus wages, a trade-off often embedded in job choice, as in many Organisation for Economic Co-operation and Development (OECD) countries pension entitlements—both public and occupational—are tied to the type of job. When pension benefits are more generous, wages tend to be relatively lower because providing such benefits entails costs for employers. Therefore, firms offer different wage–pension bundles, and workers sort themselves across firms according to their preferences for these bundles (Cole & Taska, 2024; Disney et al., 2009).

The existing literature is inconclusive about the existence of the wage-pension trade-off. While some studies find a positive relationship between wages and pensions (Even & Macpherson, 1990; Gunderson et al., 1992; Gustman et al., 1994), others find a negative relationship (Banks & Oldfield, 2010; Bosch et al., 2022; Fitzpatrick, 2015; Scarfe et al., 2024; Smith & Ehrenberg, 1983), or no relationship (Haynes & Sessions, 2013). Using both instrumental variables and a discrete choice experiment approaches, Cole and Taska (2024) find that employers offering one extra dollar in retirement benefits have twice the success in hiring employees compared to employers offering one extra dollar in wages. Using a discrete choice experiment, Fuchsman et al. (2023) find that teachers in the United States (US) are willing to forego 1.6% of their wage for a 1 percentage point increase in their retirement benefits. Exploiting a policy change in teachers’ pension benefits which allowed teachers to purchase additional pension benefits, Fitzpatrick (2015) concludes that teachers are more responsive to wages than they are to pensions.

Multiple explanations exist for the inconclusive results regarding the trade-off between wages and pensions. First, very detailed data are needed to avoid omitted variables bias that affects the relationship between wages and pensions. For example, more productive employees are likely to receive both higher wages and pensions—as employers may use pension benefits to reward productivity. Because pension benefits are typically a linear function of wages, higher-wage workers automatically receive higher pension benefits (Fitzpatrick,

2015). This implies that an ordinary least squares (OLS) approach will produce a positively biased estimate of the pension–wage relationship (Disney et al., 2009; Gunderson et al., 1992; Haynes & Sessions, 2013). Controlling for individual fixed effects using longitudinal data which track individuals over time may also not solve the problem, since job changes are not random (Eriksson & Kritsensen, 2014). Finally, workers’ outside options are unobserved, and realised job matches may not perfectly reflect their preferences, as firms also have preferences for particular workers (Wiswall & Zafar, 2018). For example, in the context of gender differences, men and women may receive job offers from different distributions (Sorkin, 2018), which must be taken into account.

2.2 Employees’ Demand for Pensions

Several explanations exist as to why workers may self-select into jobs with specific wage-pension bundles. Worker’s preferences for current pay over deferred pension benefits may be explained by differences in risk aversion, financial time horizon and financial literacy (Lusardi & Mitchell, 2008).

In the public sector, workers often receive more generous pension benefits than similar workers in the private sector. This disparity has been in part attributed to public sector workers exhibiting lower discount rates and higher levels of risk aversion (Disney et al., 2009; Fitzpatrick, 2015; Haynes & Sessions, 2013). Risk-averse workers are hypothesised to value pension benefits more highly, influencing their job choices—a view supported by empirical evidence showing that sectors with more generous pension benefits tend to attract more risk-averse workers (Clark et al., 2019; Gustman et al., 1994; Haynes & Sessions, 2013). Pension benefits will become increasingly dependent on individual risk attitudes in the future due to increased individual responsibility (Bernasek & Schwiff, 2001) .

Workers who score better in terms of financial literacy are better at identifying financial benefits of retirement plans (Fuchsman et al., 2023). Financial literacy is also closely connected to an individual’s financial time horizon, whereby more future-oriented individuals are better prepared for retirement (Rolison et al., 2017). A study by Munell et al. (2001) shows that more forward-looking workers are also more likely to enrol in an occupational pension plan and to save more.

Life expectancy and retirement expectations can significantly influence the valuation of current versus future income. Pension benefits serve as insurance against longevity risk (Andersen et al., 2021; Fitzpatrick, 2015; Gustman et al., 1994), a role that is particularly relevant given the life expectancy gap between men and women. On average, women live 5–6 years longer than men but earn lower wages over their careers, leading to smaller pension contributions and savings (Barrigozzi et al., 2021; Bernasek & Schwiff, 2001). Consequently,

women face a higher risk of poverty in retirement (Angelici et al., 2022). Moreover, because women are often younger than their male partners, the likelihood of becoming widowed in retirement is greater (Angelici et al., 2022; Nivakoski & Nolan, 2019). Evidence from Banks and Oldfield (2007) shows that women with a higher probability of widowhood tend to accumulate more pension benefits by retirement age than those with a lower probability.

3 Theoretical Framework

In this section, we theoretically describe the trade-off between wages and pensions. Our framework is based on earlier literature on compensating wage differentials and job choice models (Fitzpatrick, 2015; Folke & Rickne, 2022; Sorkin, 2018; Wiswall & Zafar, 2018). We describe workers’ wage–pension decisions through their job choices, using job offers that vary in wage and pension combinations. Building on this setup, we develop a simple job choice framework to estimate workers’ valuation of pension benefits.

The theory of equalizing differences posits that equally qualified individuals receive the same overall compensation, though they may prefer different mixes of monetary and non-monetary benefits. It follows that for a given worker, higher non-monetary benefits should be offset by lower wages, and vice versa. Workers will sort between firms to obtain a job offer which matches their preferences (Banks & Oldfield, 2010; Bonhomme & Jolivet, 2009). Consequently, there will be selection into jobs by different groups of workers (Haynes & Sessions, 2013).

Following Rimlinger (1963) and Smith and Ehrenberg (1983), and assuming pensions are part of the compensation package, there should also exist a compensating differential between wages and future pension benefits. The higher current wages, the lower future pensions, and vice versa (Biasi, 2024), since higher pension benefits come at a cost, such as higher taxes. The existence of pension benefits allows employees to substitute future and present income (Rimlinger, 1963), making it possible for individuals to reallocate income across time (Schiller & Weiss, 1980). Pension benefits can consequently be seen as a form of deferred wages (Schiller & Weiss, 1980).

We now turn to the decision made by workers regarding their optimal wage-pension package. Consider a job choice framework similar to Mas and Pallais (2017) and Wiswall and Zafar (2018), where individual i receives job offers from firm j . Job offers consist only of two characteristics: wages (W_{ij}) and pension benefits (P_{ij}). Pension benefits are defined as a combination of state and occupational pensions, in line with Danzer and Dolton (2012). Each job offer yields specific worker utility U_{ij} . Workers maximize their utility by making binary choices over jobs which offer the linear combination of wages and retirement benefits

that will maximize their utility. Utility of individual i working at firm j ($U_{ij} \in R$) can be described as follows:

$$U_{ij}(W, P) = \gamma_i \ln(W_{ij}) + \delta_i(P_{ij}) + \varepsilon_{ij}, \quad (1)$$

where γ_i is the value placed on wages, δ_i is the value placed on retirement benefits, and ε_{ij} is an independent and identically distributed ($\mathcal{IID}$) random preference component. Furthermore, assume that there are only two firms in the labour market: $j = k, m$. Firm k offers higher pension/lower wage bundle, and firm m offers exactly the opposite—lower wage/higher pension bundle. This implies that $P_k > P_m$ and $W_k < W_m$. ε_{ij} and ε_{ik} are $\mathcal{IID}$ Extreme Value Type I errors, and uncorrelated with γ_i and δ_i . Firm k will be chosen by worker i if:

$$U_{ik} > U_{im} \quad (2)$$

$$\gamma_i \ln(W_{ik}) + \delta_i(P_{ik}) + \varepsilon_{ik} > \gamma_i \ln(W_{im}) + \delta_i(P_{im}) + \varepsilon_{im}$$

$$\begin{aligned} P(U_{ik} > U_{im}) &= P[\varepsilon_{im} - \varepsilon_{ik} < (P_{ik} - P_{im})\delta_i + (\ln(W_{ik}) - \ln(W_{im}))\gamma_i] \\ &= \Lambda[(P_{ik} - P_{im})\delta_i + (\ln(W_{ik}) - \ln(W_{im}))\gamma_i] \\ &= \frac{\exp[-((P_{ik} - P_{im})\delta_i + (\ln(W_{ik}) - \ln(W_{im}))\gamma_i)]}{1 + \exp[-((P_{ik} - P_{im})\delta_i + (\ln(W_{ik}) - \ln(W_{im}))\gamma_i)]} \end{aligned}$$

Workers will maximise their utility when the subjective value of pension income equals the current income foregone (Rimlinger, 1963). At this point, workers will be indifferent between the choice of lower wages today and higher pensions tomorrow. This trade-off is dependent on workers' preferences for pensions (δ_i) versus workers' preferences for wages (γ_i). We rewrite W_{ik} , W_{im} and P_{ik} , P_{im} as W , $(W \times WTP)$ and P , $(P + \Delta)$, respectively. Workers are indifferent between two wage-pension bundles when the value of total compensation in job 1 equals the total compensation in job 2:

$$\delta_i(P) + \gamma_i \ln(W) = \delta_i(P + \Delta) + \gamma_i \ln(W \times WTP),$$

where Δ is the difference in offered pension benefits between jobs 1 and 2. Solving for the optimal trade-off yields:

$$WTP = 100 \left[1 - \exp\left(\frac{-\delta_i}{\gamma_i} \Delta\right) \right],$$

where 'exp' denotes the exponential function, and WTP is the estimate of willingness to pay (WTP is expressed as a percentage of the wage); β_i and γ_i are the coefficients which will be identified using the experimental design.

4 Experimental Setup

Estimating the monetary trade-off between wages and pension benefits comes with a number of identification challenges, which we discussed in Section 2.1. These challenges arise from unobservable characteristics and a lack of data on individual’s outside options. We overcome these identification issues by conducting a discrete choice experiment (DCE) using fictitious job offers, each offering different combinations of wages and pensions. In a discrete choice experiment, researchers present individuals with hypothetical situations (vignettes) consisting of the same attributes that vary in their levels. In these hypothetical situations treatment can be manipulated and, consequently, we can obtain a causal estimate of preferences for offered choices (Auspurg & Hinz, 2015). We generate our own identifying variation (Maestas et al., 2023; Stantcheva, 2023) by observing both accepted and rejected job offers (Folke & Rickne, 2022), which enables us to capture outside options and isolate preferences for specific job attributes (Wiswall & Zafar, 2018). Using this research design, all workers are presented with the same job offers.

In our study, each job offer contains the same set of attributes, such as pension benefits and wages, but with varying levels. Additional attributes, including commuting time and the option to work from home, are incorporated into the vignettes to avoid revealing the study’s primary focus and to assess the validity of our experimental results. Working from home (WFH) is selected as an attribute, because its importance to workers has grown substantially since COVID-19, with several studies showing that employees place significant value on WFH arrangements (Maestas et al., 2023; Mas & Pallais, 2017). Commuting time is also considered an important job attribute and has been shown to receive even greater valuation from workers (Nagler et al., 2022). An overview of the attributes and their accompanying levels is given in Table 1.

Table 1: Overview of vignette dimensions and levels

Dimensions	Levels	Information given to respondents
Monthly wage	Current wage/reservation wage	<i>Average net monthly wage, excluding all benefits</i>
	-5 %	
	+5 %	
	+10 %	
Pension benefits (replacement rate)	65%	<i>Future pension benefits</i>
	70%	
	75%	
	80%	
Commuting time	Current commute	<i>Travel time to work (one-way)</i>
	-5 mins.	
	+5 mins.	
	+10 mins	
Working from home (WFH)	2 days/week	<i>Possibility to work from home</i>
	3 days/week	

Respondents are instructed to assume that the job offers are similar to one another, and involve tasks comparable to their current job. The wage offers presented in the vignettes are expressed as a percentage of the respondent’s actual wage, reported earlier in the survey.

Those unwilling to disclose their exact wage are asked to indicate it within income brackets, or to provide a reservation wage. Pension benefits are calculated by multiplying the respondent’s wage by a randomised replacement rate¹ rather than using a fixed monetary amount. Individuals generally seek to maintain a consistent standard of living throughout their lifetime. In this context, it is the relative level of benefits, not the absolute amount, that matters (Scott et al., 2020). The offered replacement rate ranges between 65% and 85%.

Combining all attribute levels produced a total of 128 possible vignette combinations. To reduce the number of vignettes respondents had to evaluate, and to minimize the variance of the parameters which we wish to estimate, we used a D-efficient experimental design (Auspurg & Hinz, 2015). Using the D-efficient design, we drew 30 vignettes from the full vignette universe. The D-efficient design should result in a combination of vignettes which are not correlated to each other, and have a balanced distribution of attributes and levels. Job offers are randomly assigned to respondents. An example of the information shown to respondents can be found in Figure 1. Dominant choice options are not excluded from the experiment, but are instead used to measure respondent’s attentiveness. We assume in this context that workers prefer higher wages, higher pensions, less commuting time, and more days working from home.

Figure 1: Example of a job offer pair

English ▾

Based on the information in the table, which of the two jobs would you prefer?
Remember that the jobs are identical, other than the differences shown in the table.

	Option 1	Option 2
Salary	2730	2600
Pension benefits	1690	2080
Commuting time	5	10
Possibility to work from home	2 days/week	3 days/week

Option 1
Option 2

Your choice: ☐ ☐

The post-experimental survey includes questions which are used to analyse heterogeneity in respondents’ choices. A full list of questions can be found in appendix Table A.1. We hypothesise that differences in risk aversion, financial literacy, and current savings and investments can explain a part of worker’s valuation of retirement benefits.

Risk aversion. To measure risk aversion in our survey, we present respondents with the following question, as suggested by Charness et al. (2013): “You have the opportunity to

¹The replacement rate is the ratio of the salary to pension benefits.

buy a lottery ticket. There is a 50% chance to win 10 pounds, and a 50% chance to win nothing. How much would you be willing to pay for this lottery ticket?”

Financial literacy. In addition to respondent’s risk aversion, we are also interested in financial literacy. Similar to the questions proposed by Lusardi and Mitchell (2008), designed for the US Health and Retirement Study, we want to get an idea about respondent’s general economic literacy and numeracy, since they have an important impact on individual’s retirement planning. We pose the following two questions: “Suppose you had 100 pounds in savings and the interest rate was 2% per year. After 5 years, how much in savings do you think you would have: more than 102 pounds, exactly 102 pounds, less than 102 pounds.” “Now imagine the same scenario as before. The interest rate is 1%, instead of 2%, and inflation is around 2% per year. Would you be able to buy more, less or the same as today?” The sum of all correct answers is used as a measure of financial literacy.

Financial time horizon. Last, we ask the following question with regard to financial planning horizon, similar to Pence (2002) and Fischer and Montalto (2010): “In planning your savings and investments, which time period is most important to you?” (a) Next few months, (b) Next year, (c) Next few years, (d) Next 5-10 years, (e) Longer than 10 years, or (f) I don’t have any savings or investments.

Furthermore, we ask our respondents questions about current retirement savings and their expected benefits in each of these schemes (public, occupational and personal private savings). We ask them whether they are eligible to receive this pension when retired, and what is their expected net monthly retirement benefit. In the next section, we discuss the data collection in more detail, as well as the empirical strategy.

5 Data Description and Empirical Strategy

5.1 Data Description

Our experiment was distributed to an online sample of workers in April 2024, in the United Kingdom (UK), through the Prolific Online Survey Platform.² The survey was only distributed to users who are of working age, are currently employed, and had an approval rate of previous submissions of 95%.³ A total of 1,532 workers participated in the survey. We remove 17 respondents because they did not complete the survey. We also remove individuals who have zero, or outlier values for wages,⁴ and/or who had missing information for some of the demographic variables. Doing so reduces our sample to 1,206 workers.

²<https://www.prolific.com/>

³The Prolific approval rate shows how often a respondent has been approved for previous surveys on the platform.

⁴For example, workers who responded they earned more than £10,000 net per month or less than £400.

Table 2 provides summary statistics of our sample of respondents. Details on the questions asked in the survey can be found in Appendix Table A.1. The average worker in our sample is 40 years old, high-educated, married and has one child. The average monthly net wage of the respondents is 2258.5 pounds. Of the total sample, 66% of the workers report being a member of workplace pension plan.

Table 2: Demographics and workplace characteristics: comparison with the UK Understanding Society

		Experimental data			Understanding Society		
Variables		Mean	Min	Max	Mean	Min	Max
Age		40.1	19	67	43.4	18	67
Gender	Male	0.45	0	1	0.45	0	1
	Female	0.54	0	1	0.55	0	1
	Third gender	0.01	0	1	0.0	0	1
Marital status	Married	0.66	0	1	0.57	0	1
	Single	0.28	0	1	0.32	0	1
	Divorced	0.05	0	1	0.08	0	1
	Widowed	0.00	0	1	0.01	0	1
Children		1.02	0	6	1.70	0	10
Education	Primary	0.00	0	1	0.00	0	1
	Secondary	0.32	0	1	0.43	0	1
	Higher	0.68	0	1	0.57	0	1
Migrant (1 st gen.)		0.12	0	1	0.18	0	1
Weekly working hours		34.0	1	70	33.6	1	98
Commute (min.)		26.9	1	180	25.0	1	900
Working from home	Days per week	0.56	0	1	0.43	0	1
Workplace pension		0.70	0	1	0.90	0	1
Wage (£)	Net-wage per month	2258.5	400	10,000	1,886.9	400	7,000
NACE	Agriculture, forestry & fishing	0.01	0	1	0.00	0	1
	Mining and quarrying	0.00	0	1	0.00	0	1
	Manufacturing	0.05	0	1	0.09	0	1
	Electricity, gas	0.00	0	1	0.00	0	1
	Water supply, sewerage and waste management	0.00	0	1	0.00	0	1
	Construction	0.02	0	1	0.04	0	1
	Wholesale and retail trade	0.08	0	1	0.13	0	1
	Transportation and storage	0.04	0	1	0.04	0	1
	Accommodation and food services	0.05	0	1	0.03	0	1
	Information and communication	0.05	0	1	0.04	0	1
	Financial and insurance activities	0.08	0	1	0.04	0	1
	Real estate	0.00	0	1	0.01	0	1
	Professional and scientific activities	0.08	0	1	0.07	0	1
	Administrative support	0.03	0	1	0.03	0	1
	Public administration	0.10	0	1	0.09	0	1
	Education	0.15	0	1	0.13	0	1
	Human health and social work	0.06	0	1	0.20	0	1
	Arts	0.02	0	1	0.02	0	1
	Other	0.14	0	1	0.02	0	1
	Household work	0.00	0	1	0.00	0	1
	Activities of extraterritorial organisations	0.00	0	1	0.01	0	1
No. of respondents		1,206			11,505		

Notes: We used Understanding Society Wave 12, because pension scheme membership was not asked in Wave 13 (University of Essex, Institute for Social and Economic Research, 2024). NACE = Statistical classification of economic activities in the European Community.

Because the sample of workers in our survey may be selective, we make a comparison with a representative sample of workers in the UK, based on the UK Understanding Society (University of Essex, Institute for Social and Economic Research, 2024). Overall, there are few differences in the observable characteristics between our sample and the sample from Understanding Society. The workers in our sample are more likely to be married, have fewer children, and are less likely to work in health or social work. The average working hours, net wage and commuting time are very similar in both samples. The number of workers who

report being a member of an occupational pension plan is 70% in our sample, while it is 90% in the whole UK based on Understanding Society. In our sample, 38% of workers who do not receive a workplace pension report that they opted out of their plan, while 62% of them are not eligible. In addition, workers who report not having a workplace pension score worse on the financial literacy questions than those who do.

We also collected data on respondent financial behaviour and pension expectations, which can be found in Table 3. Most workers plan their savings and investments with the next 5 to 10 years in mind. Only 6% of workers have no savings or investments at all, and around 45% of all workers have invested in a private pension fund at some point in their life. In our sample, 85% of the respondents are aware of the introduction of automatic enrolment in the UK, which increased mandatory contributions to pension schemes from 3% to 8%.

Table 3: Descriptive statistics: expectations and behaviour

Variables		Mean	Min	Max
Risk aversion		2.98	0	4
Financial time horizon	Next few months	0.08	0	1
	Next year	0.10	0	1
	Next few years	0.28	0	1
	5-10 years	0.28	0	1
	> 10 years	0.20	0	1
Financial literacy score		1.66	0	2
No savings/investments		0.06	0	1
Home owner		0.62	0	1
Private pension savings	Active	0.28	0	1
	Passive	0.17	0	1
	No	0.55	0	1
Aware of automatic enrollment		0.84	0	1
Future public pension (£)		1,043.51	0	60,000
Future workplace pension (£)		1,325.89	0	200,000
No. of respondents		1,206		

Notes: The sample of respondents is the same as in Table 2

5.2 Empirical Strategy

Given respondents' choices of specific job offers in the experiment, we estimate their willingness to pay for an increase in pension benefits. Suppose a simple situation in which a respondent is presented with two job offers. Job 1 offers high pension benefits with wage w_1 . Job 2 offers low pension benefits with wage w_2 . Assuming a compensating differential, the following rule applies: $w_1 < w_2$. Job offer 1 will be preferred if the individual's maximum trade-off is larger than $w_1 < w_2$. Individuals who choose the job offer 1 at differential $w_1 - w_2$, but not at differential $(w_1 - w_2) + \varepsilon$, are willing to trade off $w_1 - w_2$ in current wage for higher pension benefits. At this point, the worker is indifferent between higher wages and lower pension, and vice versa. Although we cannot measure the exact valuation of pension by workers, we can identify the lower and upper bounds.

To estimate the trade-off between wages and pensions, we estimate the following logistic regression:

$$P(Y_{ij} = 1) = \alpha + \beta_1 \ln(W_{ij}) + \beta_2 P_{ij} + \beta_3 X'_{ij} + \delta_i + \varepsilon_{ij} \quad (3)$$

where Y_{ij} is a binary variable that denotes whether the individual i chooses job 1 over job 2 in situation j (*choice set*); W_{ij} denotes the difference in wage between jobs 1 and 2, P_{ij} denotes the difference in offered pension benefits (as a proportion of the offered wage) between jobs 1 and 2, and X'_{ij} is a vector of differences between other job attributes included in the vignette; δ_i is a vector of individual workplace and demographic characteristics. We use the logarithm of the offered wage because the offered wage is based on the worker's reported wage, and it facilitates interpretation as percentage changes.

The probability of choosing job 1 over job 2 is modelled following a cumulative logistic distribution. Standard errors are estimated using the delta method, following Hole (2007). We are interested in β_2 , which is workers sensitivity to changes in future pension benefits with respect to their choice of job. The monetary trade-off between wages and pensions can be estimated by calculating the willingness to pay (WTP), as a percentage of the wage.

$$WTP = 100 \left[1 - \exp \left(\frac{-\beta_2}{\beta_1} \right) \right] \quad (4)$$

The willingness-to-pay (WTP) estimate shows which compensating differential in retirement benefit contributions is needed if the worker's wage is reduced. A WTP of 2% means that the workers are willing to give up 2% of their wage today for a one percentage point increase in pension benefits in the future. Apart from the mean willingness to pay, we are also interested in heterogeneous preferences. In order to calculate the WTP differential between different groups of workers, we include interaction terms in our main regression. The coefficient of this interaction term, for characteristic δ_i , is then added to the numerator in equation 4 following Fuchsman et al. (2023):

$$WTP = 100 \left[1 - \exp \left(\frac{-(\beta_2 + \beta_2^{\delta_i})}{\beta_1} \right) \right] \quad (5)$$

6 Estimation Results

6.1 Willingness to Pay Analysis

We now turn to empirical estimates of the willingness to pay for pension benefits. Our results are presented in Table 4 as the percentage increase in wage associated with adding/removing a job amenity, in line with Maestas et al. (2023). We can see that the respondents show positive willingness to pay for pensions and the possibility to work from

home. Our estimates for commuting time and work from home are close to what is found in other studies. In general, estimates for having the possibility to work from home range between 5 to 10% of the worker's wage. The average is around 5% (Aksoy et al., 2022; Van Landeghem et al., 2024).

We estimate two different models to test the robustness of our experimental design: a mixed logit model and a standard logit model. We begin by presenting the results of the standard logit model. Our findings indicate that workers are willing to trade off a portion of their current wage for an increase in pension benefits in the future. In our baseline model (column 1 of Table 4) not including control variables or an inattention check, a one percentage point increase in the pension replacement rate is equivalent to a 0.30% increase in the wage. Adding control variables or limiting the sample to attentive respondents in (columns 2 to 4) does not change our results. In monetary terms, this means that the average worker (with an average wage) is willing to forego 44 pence in their wage for a £1 increase in their pension, holding other job factors constant.⁵ In all models for the standard logit model, the coefficient for pension benefits is positive, robustly estimated, and statistically different from zero. The estimate in the mixed logit model is slightly larger than in the standard model, suggesting that there is heterogeneity in willingness to pay between different groups.

Table 4: Willingness to pay for job amenities

	WTP (as % of monthly wage)				
	Standard logit				Mixed logit
	(1)	(2)	(3)	(4)	(5)
Pension benefits (% of wage)	0.30*** (0.04)	0.30*** (0.04)	0.29*** (0.05)	0.28*** (0.05)	0.36*** (0.03)
Commute	-0.08** (0.04)	-0.09** (0.04)	-0.10** (0.06)	-0.13** (0.05)	-0.25*** (0.04)
Work from home	4.48*** (0.44)	4.42*** (0.46)	4.61*** (0.53)	4.66*** (0.55)	3.90*** (0.47)
Controls	No	Yes	No	Yes	No
Inattention check	No	No	Yes	Yes	No
No. of observations	6,294	3,147	2,967	2,204	2,074
No. of clusters	1,155	1,155	1,088	810	762

Notes: Coefficients are based on the marginal effects of a logistic regression model. Standard errors (in parenthesis) calculated using the delta method are clustered at the individual level. Willingness to pay is expressed in percentage wage change. Pension replacement rate (pension benefits) are measured from 0 to 100. Commuting time is measured in minutes. Working from home is measured in days. Controls are gender, age, working hours, seniority, telework, commuting time, number of children, marital status, home ownership, financial time horizon, risk aversion and financial literacy. All specifications exclude choice tasks with a dominant choice.

* p<0.10 ** p<0.05 *** p<0.01

⁵This estimation is based on the average wage in the main sample. We choose a replacement rate of 65% as the baseline replacement for job 1.

6.2 Heterogeneity Analysis

In the previous section, we showed that the average worker is willing to forego 0.3% of their wage for a one percentage point increase in future pensions. The difference in estimates from the mixed logit and the standard logit model in Table 4 suggests that there is unobserved heterogeneity. The average worker may be quite different from certain subgroups in the workforce. In this section, we analyse differences in the willingness to pay among groups that typically experience pay and pension penalties. We therefore repeat the willingness-to-pay analysis by gender, age, migrant status, highest level of education, and income level. In addition, we also assess whether preferences for pension benefits are related with the reported pension saving behaviour of the respondents. We assess whether workers with private pension savings, and with high pension expectations show higher willingness to pay.

Figure 2 shows the mean willingness to pay estimates, as a percentage of wage increase, by gender, age, income level, private pension savings, ethnicity and education. On average, men are willing to give up 0.36% of their monthly wage for a one percentage point increase in their future pension benefits. Women are only willing to give up 0.26% of their wage for a similar increase. However, the difference in WTP between men and women is not statistically significant at the 5% significance level ($p = 0.06$).

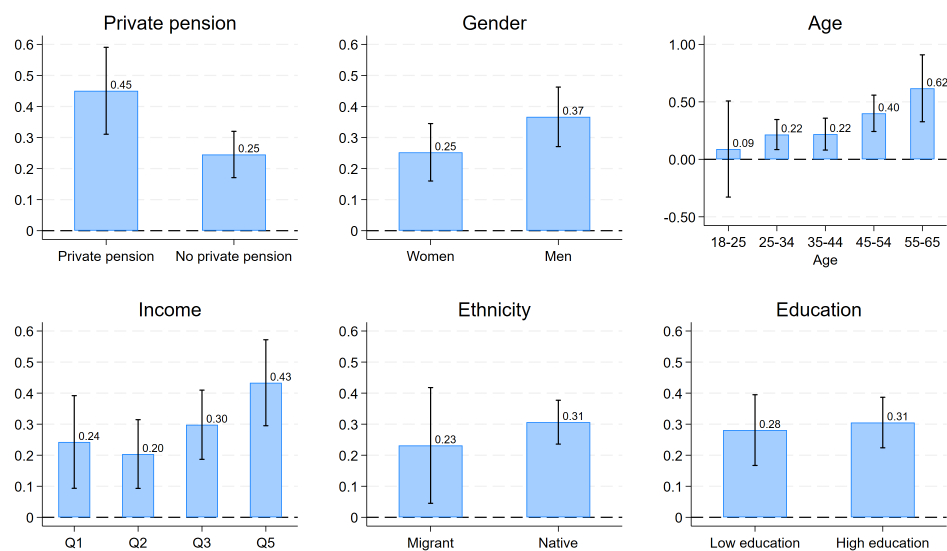
Workers may change in their preferences of pensions over wages as they get closer to retirement age, because pension benefits become more important the closer they are to retirement. Moreover, the period over which workers need to forego wage is shorter if they are closer to the legal retirement age. Indeed, Figure 2 shows that worker's willingness to pay for increased pension benefits increases as they get closer to the legal retirement age. Workers aged 55 to 67 are willing to forego 0.62% of their wage for a one percentage point increase in their pension benefits, whereas workers aged 25 to 34 are only willing to forego 0.22%. Differences in WTP between different age groups are statistically significant at the 5% significance level ($p = 0.00$) (see Figure 2). Figure 2 further shows that workers who are actively saving for their pension are willing to forego 0.40% of their wage for a one percentage point increase in their pension replacement rate, whereas workers who are not saving for their retirement are only willing to forego 0.25% of their wage, all else equal.

In line with Cole and Taska (2024), we find that high-income workers are willing to forego a higher percentage of their wage for more pension income, in comparison to low-income workers. While Cole and Taska (2024) conclude that workers in the lowest 25% of the income distribution are not willing to forego any wage in exchange for pension benefits, we find that they are willing to forego 0.25%. Workers in the highest 75% of the income distribution are willing to forego almost double that amount (0.47%) for a similar increase.⁶

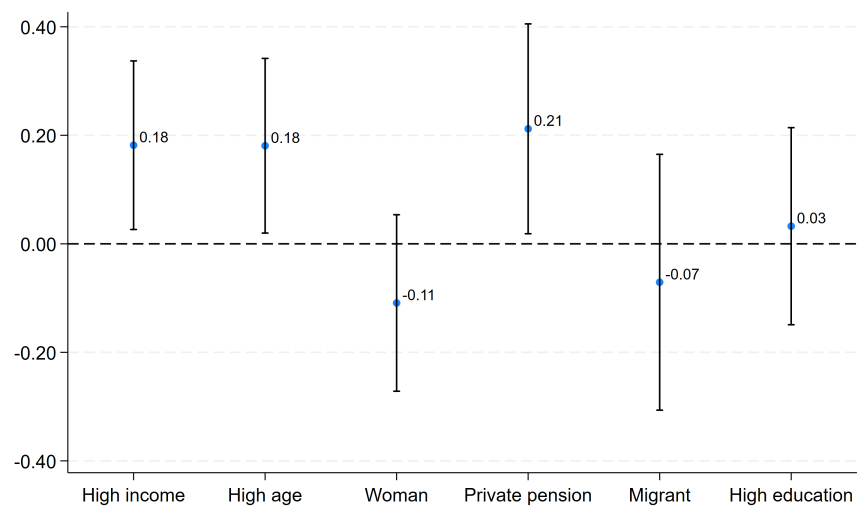
⁶The average wage for workers in the lowest income quartile is £1018, the average wage for workers in

Figure 2: Differences in willingness to pay for pension benefits (% of wage)

(a) Panel A:



(b) Panel B:



Notes: WTP estimates are based on the marginal effects of a logistic regression, controlling for home ownership, number of children and marital status. Standard errors are calculated using the delta method and are clustered at the individual level. The definition of "high" and "low" is based on the median split of each variable. We compare willingness to pay for pension benefits for workers who are above and below the median for each respective variable.

The difference in WTP between high- and low-income workers is statistically significant at the 5% significance level (see Figure 2).

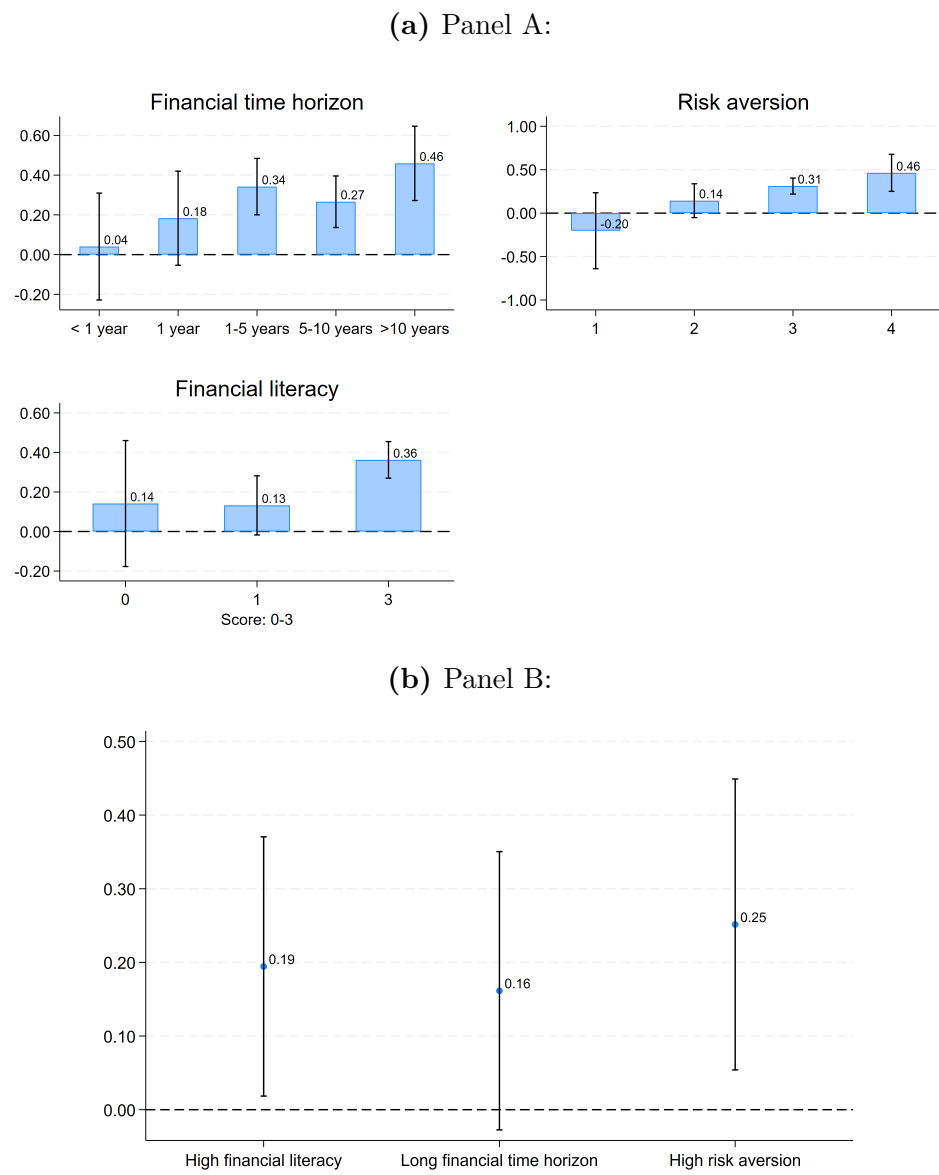
Next, we take into account that migrants have significantly less wealth compared to natives in most western countries, specifically in pensions (Ferrari, 2020; Zillesen, 2022). Pensions are designed for individuals with long, uninterrupted careers and often require many contribution years. As migrants may only arrive in their country of immigration later in life, their period over which they can save differs from that of natives (Marcora et al., 2024). We test whether migrants show similar willingness-to-pay for pension benefits compared to native workers. Our results show that there are no significant differences in WTP for pensions between the two groups (see Figure 2). This is a novel result, as there is relatively little research on the retirement planning of immigrants. To corroborate our results, the paper by Åslund et al., 2024 concludes that the differences between retirement behaviour of natives versus migrants are driven by economic necessity or opportunity, rather than varying preferences.

Furthermore, we analyse differences in willingness to pay by financial time horizon, financial literacy, and risk aversion. In general, financial characteristics are significantly related to willingness to pay for pension benefits (Fuchsman et al., 2023). Figure 3 shows that workers with longer financial time horizons, higher financial literacy, and those who are more risk averse are willing to forego a higher percentage of their wage for an increase in their future pension benefits. Figure 3 further shows whether differences in WTP by financial characteristics are significant. We test this by creating a median split for each variable and comparing the WTP for workers who are above and below the median for that variable. The differences are significant for financial literacy and risk aversion, but not for financial time horizon.

Workers who are more risk averse are willing to forego a higher proportion of their wage for additional pension benefits. This finding aligns with theoretical predictions that risk-averse workers sort into jobs with generous pension benefits, but comparatively lower wages (Disney et al., 2009; Gustman et al., 1994; Haynes & Sessions, 2013). Similarly, workers with higher levels of financial literacy are willing to forego a higher percentage of their wage in return for additional pension benefits.

the highest quartile is £2,900.

Figure 3: Differences in willingness to pay for pension benefits (% of wage) by financial characteristics



Notes: WTP estimates are based on the marginal effects of a logistic regression, controlling for home ownership, number of children and marital status. Standard errors are calculated using the delta method and are clustered at the individual level. The definition of "high" and "low" is based on the median split of each variable. We compare willingness to pay for pension benefits for workers who are above and below the median for each respective variable.

7 Discussion and Conclusion

Pension systems across OECD countries are undergoing major reforms in response to population ageing, with individuals expected to rely more heavily on private retirement savings. One prominent policy measure has been the introduction of automatic pension enrolment, which requires employers to register their employees in occupational pension plans. Since these plans impose costs on employers, they may translate into lower wages for workers (Bosch et al., 2022; Scarfe et al., 2024). Such reforms therefore carry important implications not only for fiscal budgets, but also for labour supply and workers’ financial well-being (Danzer & Dolton, 2012; Fuchsman et al., 2023). Against this backdrop, our study investigates workers’ preferences regarding pensions and pay.

To examine workers’ willingness to trade current wages for future pension benefits, we conducted a discrete choice experiment among an online sample of UK workers. The UK provides a particularly relevant case, given the recent introduction of automatic enrolment. In the experiment, respondents repeatedly chose between fictitious job offers that varied in wage and pension packages. On average, workers were willing to give up 40 pence of their current wage for a £1 increase in future pension benefits—equivalent to about 0.3% of their wage. Although workers generally preferred higher wages over pensions, their willingness to pay was far from zero: the majority of participants were prepared to forgo part of their wage in exchange for higher pension benefits, indicating that most are willing to shift at least some of their total compensation into the future.

In addition, we find that the willingness to pay for pension benefits is heterogeneous across demographic and financial characteristics. While women, migrants and lower-educated individuals hold less pension wealth in general, they do not show different willingness to pay for current over future income. In line with Cole and Taska (2024), we do find that high-income workers are willing to pay more than low-income workers. However, while Cole and Taska (2024) conclude that workers in the lowest 25% of the income distribution are not willing to forego any proportion of their wage, we find that low income workers are willing to forego some proportion. In addition, we also come to similar conclusions regarding age-related willingness to pay. Older workers are willing to forego a significantly higher percentage of their wage for an increase in retirement benefits. In fact, the youngest group of workers aged 18 to 25, isn’t willing to forego any of their wage.

Workers who have private personal pension plans show strong preferences for the future over present compensation. Their willingness to pay for additional pension benefits, with respect to their wage, is higher than for workers without private pension savings. Hence, in addition to already saving more, they would benefit more from an increase in pension benefits and a decrease in wages than workers who have no pension savings.

Although most workers would benefit from pension benefits becoming more generous, older high-income workers would benefit most. Differentiation of firm retirement benefits is difficult, as in the UK and many other countries, pension scheme discrimination based on personal characteristics such as age is not allowed. In our study, we find that workers are on average willing to forego 0.3% of their wage. Scarfe et al. (2024) conclude that the introduction of automatic enrolment in the UK has, on average, led to a decline in take-home pay of 0.9%. At the margin, the introduction of automatic enrolment might have negative consequences for worker’s financial well-being.

Our analysis comes with some limitations. First, it is important to note that our sample is not randomly drawn from the entire population. Workers who are active on Prolific self-select into participating on the platform and may not fully represent the working population in the UK. However, our comparison with the entire UK based on Understanding Society data shows that differences in demographic and workplace characteristics between the two samples are negligible. Furthermore, when we compare our estimates for commuting time and working from home (WFH) with other studies, our estimates are very similar. Maestas et al. (2023) finds that workers are willing to forego around 4% of their wages for one additional day of working from home. Similarly, Aksoy et al. (2022) conclude that workers are willing to forego around 5% of their wages for an additional WFH day. In our survey, we find a willingness to pay for working from home of around 4% of the worker’s wage. Second, our survey does not capture true preferences. Decisions made within an experimental setting may differ from decisions made in the actual labour market. To minimise this, we anchored our vignettes to respondents’ actual jobs. Furthermore, previous work has shown that discrete choice experiments match real-life labour market decisions quite closely (Wiswall & Zafar, 2018). To further overcome this issue, future research could implement a similar experiment within a panel survey. Doing so, respondents could be followed through time and their preferences could be linked with career choices later in life. Lastly, our hypothetical choice experiment does not allow for an estimation of individual-level willingness to pay. This limits our analysis because we cannot derive whether workers with high willingness to pay are more likely to save for their pension or to sort into different jobs. In order to estimate this, without having to present respondents with a high number of vignettes, workers could be sequentially asked their reservation wage for a given job offer in the style of Kesternich et al. (2024).

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A Appendix

Table A.1: Questionnaire: demographics, current job and post-experiment questions

Variables	Question	Levels
Age	What is your year of birth?	1950-2007
Gender	I identify as:	Male Female Non-binary/third gender
Marital status	What status best fits your current situation?	Married/partner is present in the household Single Divorced Widowed
Children	Do you have any children?	No Yes (how many?)
Education	What is the highest level of education you have obtained?	Primary education Secondary education Bachelor's degree Master's degree PhD or higher
Working hours	How many hours per week are you expected to work in your current job?	Number in hours
Tenure	How many years have you been working in your current job?	Number in years
Commute	On average, how long does it take you to travel from home to work? (one-way in minutes)"	Number in minutes
Net-wage	What is your net (after tax) monthly wage, excluding all bonuses or other advantages? (if you prefer not to say, please write 0)	Number in £
Net-wage decile	Would you be willing to give us an approximate level of your net monthly earnings?	0-1,800 1,800-2,200 2,200-2,800 2,800-3,600 3,600-4,300 > 4,300
Reservation wage	What net monthly wage would you need to be offered in order to accept a new job?	In pounds/month.
Fringe benefits	In your current job, do you receive any of the following:	Company car Meal vouchers Workplace pension plan Possibility to work from home Private health insurance Commuting allowance
Risk aversion	Suppose you have the opportunity to buy a lottery ticket. There is a 50% chance to win 10 pounds, and a 50% chance to win nothing. How much would you be willing to pay for this ticket?	Nothing Less than £5 Exactly £5 More than £5
Time horizon	In planning your savings and investments, which time period is most important for you?	Next few months Next year Next few years Next 5-10 years Longer than 10 years I don't have any savings or investments
Home ownership	Do you own a house or property?	Yes No
Future pension entitlement	Will you be entitled to a public/workplace pension when you retire?	Yes No I don't know
Future pension	Please think about the time at which you will start collecting this pension. How much do you think will be your first monthly net (after tax) pension?	
Private pension	Do you currently contribute to a personal private pension plan?	Yes No No, but my partner does.
Financial literacy	Suppose you had £100 in savings and the interest rate was 2% per year. Your savings remain on your bank account for 5 years. After 5 years, how much in savings do you think you would have?	More than £102 Exactly £102 Less than £102 I don't know
Financial literacy	Imagine the same scenario as in the previous question. Now the interest rate is 1% instead of 2%, and inflation is around 2% a year. After 5 years, would you be able to buy:	More than today Less than today Exactly the same as today I don't know