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* Views expressed are those of the authors and do not necessarily reflect official positions of De Nederlandsche Bank.

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Demanding occupations and the retirement age in the Netherlands*

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Abstract

In the policy debate on increasing the statutory retirement age, the issue has been raised to make an exception for workers with demanding occupations, since health considerations may make it unreasonable to expect them to work longer. We use unique Dutch survey data to analyze the general public's opinions on what are demanding occupations, to what extent it is justified that someone with a demanding occupation can retire earlier, and on the willingness to contribute to an earlier retirement scheme for such occupations through higher taxes. A representative sample of Dutch adults answered several questions about hypothetical persons with five different jobs. Panel data models are used to analyze the answers, accounting for confounding factors affecting the evaluations of the demanding nature of the jobs as well as their reasonable retirement age or willingness to contribute to an early retirement scheme. The Dutch public thinks that workers in demanding occupations should be able to retire earlier. A one standard deviation increase in the perceived demanding nature of an occupation translates into a one year decrease in the reasonable retirement age and a 30 to 40 percentage points increase in the willingness to contribute to an early retirement scheme for that occupation. There is some evidence that respondents whose own job is similar to the occupation they evaluate find this occupation more demanding than other respondents but respondents are also willing to contribute to early retirement of occupations that are not similar to their own.

Keywords: Retirement age, public pensions, justification bias.
JEL classifications: J26, J81, H55.

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1 Introduction

Nowadays many governments are reforming pension schemes to tackle concerns about their fiscal sustainability. A widely employed and highly visible reform is to increase the statutory retirement age (OECD, 2011). This institutional feature determines at what age individuals are entitled to 'full' retirement benefits in the first pillar. Majer et al. (2013) show that not only life expectancy is still increasing, but also "healthy life expectancy", that is, the number of years spent without any serious disability . Equivalently, the trend is that health at a given age tends to increase, so that in most occupations, workers will be able to work and remain productive longer. These facts taken together naturally lead to the generic policy of increasing the statutory retirement age, so that future cohorts can contribute to the sustainability of a pay-as-you-go first pillar pension by paying premiums longer and claiming benefits for a shorter time period.

Concerns, however, have been raised about the consequences of such a generic policy for workers in demanding occupations, who often do not make it already to the current statutory retirement age and retire early or enter unemployment or disability benefits. The policy debate in the Netherlands has, for example, emphasized that low-skilled workers in the construction sector cannot be expected to work longer due to health reasons – their job requires a level of physical health that they often can no longer maintain at an older age, partly because the heavy work they have done during their whole career has accelerated the deterioration of their health. It was suggested that an exception should be made for this kind of physically demanding occupations. Many disagreed with this idea, and pointed to the large costs of such policies in other countries (Boldrin et al. 2004). They suggested making occupations less demanding by investing in technological improvements. Also complains arise when demanding occupations are allowed early retirement because such investments become unattractive (OECD, 2007). In the debate that followed, several other occupational groups have also made their arguments for an exception, not only on the basis of physical demands but also because of the mentally demanding nature of their occupation. This is in line with Borghans and ter Weel (2012) who argue that putting up a (subjective) list of heavy occupations will not work in practice, since too many groups will claim they have to be included. On the other hand, it is also not easy to define objectively what constitutes a demanding occupation. As a consequence of these practical considerations, Dutch policy

makers in the end decided to implement an increase in the statutory retirement age without making any exceptions.
But starting in 2013 the statutory retirement age is increasing and given that this increase will accelerate in the near future, the issue of differentiating among occupations may come back. This study abstracts from the debate about the possible alternatives to this policy and only considers the issue of early retirement of demanding occupations.

The aim of this paper is to examine how the Dutch population thinks about this subject. It analyses whether the Dutch population is willing to contribute to early retirement schemes for certain occupations. Perceived characteristics of occupations may make individuals more willing to contribute to such schemes. This paper examines the effect of the perceived burden of occupations on the reasonable retirement ages and the willingness to contribute to occupation-specific early retirement schemes. Second, answers driven by self-interest and by altruistic behavior are disentangled. For this distinction self-identification is crucial: in case of pure self-interest, the contribution to a retirement scheme for a certain demanding occupation will only be higher if the occupation is similar to the individual's own occupation.

The survey questions used in this study refer to pensions in general and not specifically the first pillar. In the Dutch system, the first pillar pensions of workers with demanding occupations are particularly relevant since (physically) demanding occupations are often low-paid, and first pillar pensions play a much larger role for low income than for higher income groups. This is because the first pillar provides an essentially flat basic income, which is the main source of income for those with low life-time earnings, but only a limited part of total pension income for higher life-time earnings groups who have built up a second pillar occupational pension (mandatory for almost all employees). This implies that the effects of an increase in the statutory retirement age are heterogeneous. Such an increase reduces total retirement wealth by a much larger fraction for low income than for high income individuals. It also means that "repairing" the increase in the state pension eligibility age through an earlier occupational pension is relatively expensive – this pension has to be much higher in the years before the state pension can be claimed.

Moreover, life expectancy increases with income. For instance, Kalwij et al. (2013) find that low income individuals have an approximately 2.5 years shorter remaining life expectancy at 65 years of age than high income individuals. To account for this heterogeneity, the statutory retirement age could be differentiated among socio-economic or income groups. Bovenberg et al. (2006) give strong arguments for linking this age to the (remaining) life expectancy of the socio-economic group. Ravesteijn et al. (2013) analyze the relation between

occupation and health, and conclude that workers whose poor health was caused by occupational characteristics should be exempted from an increase in the statutory retirement age if their occupational health damage was not compensated through a wage premium.

The link between disability insurance and early retirement makes the issue even more relevant. Older workers with severe health issues may be eligible for disability insurance benefits. Since the 1990's, policy reforms were implemented making entry into the Dutch disability insurance program more difficult, and inflow rates into disability insurance have decreased strongly as a consequence (García-Gómez et al., 2011). As access to disability insurance has become stricter, early retirement became more relevant, particularly for older individuals with demanding occupations, for whom work limiting health problems are more prevalent.

Perceptions and opinions of the general public may play a central role in social security policy and pension reforms in particular (Cremer and Pestieau, 2000; O'Donnell and Tinios, 2003). The political feasibility of a differentiation in the statutory retirement age therefore depends on the public's willingness to accept the life-time income redistribution from occupations with higher retirement ages to occupations with lower retirement ages this implies. In practice, the public may be inclined to differentiate between various occupations on more grounds than income alone. For example, they may think that it is justified that workers in physically demanding jobs or jobs with long working hours retire earlier than others. In other words, does the public think construction workers are entitled to earlier retirement than librarians, even if both receive the same life time wage and other benefits? Such issues have been translated into public statements by politicians and social partners and have led to the policy discussion on the possibility to exempt health-deteriorating occupations from increases in the retirement age.

The willingness to contribute to early retirement schemes for specific occupations can be given two different interpretations that will be disentangled in the analysis. The first is self-interest. Individuals holding occupations that are eligible for earlier retirement may expect to benefit from such schemes. More broadly, individuals expecting to change to such an occupation in the future may also support these schemes, as some kind of insurance device. An alternative explanation may be social preferences (DellaVigna, 2009).[2] Individuals not only care about their own resources, but also about the resources of others. The possible

[2] In addition to social preferences, Della Vigna distinguishes two other groups of nonstandard preferences, related to time and risk. These are not relevant in our context.

consequence is that individuals can be willing to contribute to early retirement schemes even if they do not expect to gain from these arrangements themselves. Perceiving such occupations as physically demanding and paying a low wage may magnify the effects of these mechanisms.

Our findings indicate a persistent ranking of the demanding nature of the occupations that are considered. Respondents attach a large weight to physical effort while mental effort or job stress is not important. Construction worker is regarded as a burdensome occupation, while teacher or desk jobs are not. This also implies a lower reasonable retirement age and a higher willingness to contribute to an early retirement scheme for construction workers than to a scheme for other occupations. The data shows that people are willing to contribute to early retirement schemes of construction workers even if they do not identify themselves with this occupation. For other occupations, such as desk jobs or teacher, this is much less the case. This shows that some of the support for early retirement of demanding occupations is driven by self-interest, but another part is driven by social preferences.

The remainder of this paper is organized as follows. Section 2 discusses some background literature and section 3 describes the relevant institutional framework in the Netherlands. Section 4 describes the survey design and the data. In section 5, the econometric model is introduced and the empirical results are discussed. Section 6 concludes.

2 Literature

There is a vast literature on the economic and non-economic determinants of retirement. Gruber and Wise (1999, 2004), among many others, analyzed the interplay between retirement benefits and exit rates from the labor market in various countries. More relevant for the current study is the role of health. Individuals could find themselves unable to continue working due to health problems. Indeed, structural models of retirement behavior often control for health status; see, for instance, Gustman and Steinmeier (2005) and Rust and Phelan (1997). Grossman (1972) argues health takes the form of a capital stock that depreciates over time. To keep the health stock at a certain level, investments are needed. In the Grossman model, the higher educated are expected to invest more in health since they can produce health more efficiently. The model implies that the determinants of health are income and education (along with the efficiency of the health care technology).

Case and Deaton (2005) add a link between occupation and health. If workers can generate earnings from their health capital or human capital, lower-educated workers may find it optimal to let their health stock depreciate more quickly as they do not have access to a large stock of human capital. Examples could be stressful or physically demanding occupations. Empirically, they find that health depreciates faster over the life-cycle for individuals in manual occupations. Sindelar et al. (2007) find a link between first occupation and health at later ages, attempting to alleviate concerns about causality. Another contribution on this topic is the longitudinal study of Fletcher et al. (2011) who find a detrimental impact of physically demanding job conditions on health, particularly for females and older workers. The theory of compensating wage differentials predicts that workers in physically demanding jobs would get a higher wage to compensate for this health loss, but the empirical literature does not find convincing evidence for this. In additional estimations Fletcher et al. (2010) add the cumulative number of hours worked and cumulative labor income and find that these measures of income cushion the effect of physical demands on health a little.

In other studies on compensating wage differentials, the evidence is mixed. In a study with Finnish data Böckerman et al. (2006) find that job disamenities have a negative effect on job satisfaction but much less on individual wages. On the other hand, Böckerman et al. (2011) find that higher job insecurity is associated with a higher individual wage in Finland, while it has no effect on job satisfaction. They conclude that the higher wage compensates for this job disamenity. Bryson et al. (2012) find with British data that wages are positively correlated with job anxiety but also with non-pecuniary job satisfaction. This is inconsistent with an explanation of compensating wage differentials, since job characteristics leading to lower non-pecuniary job satisfaction should then be compensated by a higher wage.

A possible absence of compensating wage differentials for demanding occupations, for instance due to the impossibility to properly assess future health costs of current choices, creates scope for policy intervention. The provision of an opportunity for earlier retirement is one way of compensating individuals for their demanding occupations. This paper examines the willingness of the general population to contribute to such early retirement schemes. We focus on early retirement as people in demanding occupations may find it difficult to continue working due to health issues as they get older. Neumark and Song (2012) indeed find that physical challenges in the job form a barrier to extending work lives. Holden (1988) finds that for men in the US, working in a physically demanding job is associated with lower chances of working after retirement (that is, when receiving retirement benefits), but she finds no such association for women. Filer and Petri (1988), also using US data, find that

physical demands and stress both lead to earlier retirement; workers with physically demanding jobs also prepare for this by accumulating higher pensions. Using Danish data from administrative records, Datta Gupta et al. (2012) find that workers with physically demanding jobs more often face a temporary work incapacity, but they find no significant relation with permanent work incapacity. Van Solinge and Henkens (2008) find that Dutch retirees who held physically demanding jobs are more satisfied with their retirement, providing indirect evidence for the negative effects of physical job demands at older ages.

Why would individuals be willing to contribute to early retirement schemes for demanding occupations? As stated in the introduction this can have two reasons: self-interest of social preferences. These social preferences can take various guises, like altruism, inequality aversion or reciprocity. Fehr et al. (2006) define altruism as kindness unconditional on payoffs received by others. This means that individuals will care for the payoff of others regardless of the final distribution of outcomes.[3] On the other hand, inequality averse individuals take the distribution of outcomes into account and will prefer a higher payoff for another individual only if this reduces inequality. Charness et al. (2002) show with lab experiments that individuals are willing to sacrifice own resources to increase the pay-offs of other participants, especially the least well-off participants. Tyran et al. (2006) find that a model with agents who are inequality averse better predicts the voting outcomes in a redistribution experiment than a model with rational and self-interested agents. Fehr and Gächter (2000) define reciprocity as conditional kindness: people are nicer and display more cooperative behavior in response to nice and friendly behavior of others. Unfriendly actions, however, meet uncooperative or even hostile responses.

3 Dutch retirement institutions

The retirement system in the Netherlands is relevant as Dutch respondents answer the questions of the survey with these institutions in mind. The retirement system in the Netherlands is organized in three pillars. The first pillar consists of pay-as-you-go state pension benefits. Every resident of the Netherlands is entitled to these benefits at the statutory age. Since 2009 a public policy debate revolved around an increase in this age. In spring 2012 it was decided that this age will increase gradually, starting in 2013. Consequently, the age of eligibility is currently increasing, from 65 years of age in 2013 to 67

[3] Altruism is a broad notion. It can also contain 'impure' altruism: the warm-glow effect (Andreoni, 2006). For instance, individuals may donate money to charity because it makes them feel better about themselves. Put this way giving to charity can be considered as selfish.

years of age in 2021. After that, the statutory age will be linked to life-expectancy. The benefit level depends on the number of years one has lived in the Netherlands and is independent of (life-time) income. It provides a basic income for the elderly that is usually enough to keep them out of poverty and explains why poverty among the elderly is low (except for specific groups such as immigrants or people with large debts; see Ministry of Social Affairs and Employment, 2013).

Company or sector-level retirement schemes represent the second pillar. Participation in these schemes is generally mandatory for employees. Employment in a particular sector or company implies automatic enrollment in the relevant pension plan. These schemes can be either Defined Contribution (DC) or Defined Benefit (DB). The benefit level is mainly determined by the wage and the number of years of contributions. Earlier or later take-up of pensions is usually possible so that the claiming age can differ from the statutory retirement age of the state pension.

Finally, voluntary contributions are possible in the third pillar. These additional private retirement savings are tax-deductible under certain conditions (implying that income used for these savings is not taxed during the accumulation phase, while the benefits are taxed in the pay-out phase).

The pay-as-you-go nature of the national level first pillar implies that individuals with various backgrounds and occupations contribute to each other's retirement schemes. On the other hand, the second pillar is capital-funded and organized at the company or the sector level.

4 Data and study design

We have fielded a one-time survey on demanding occupations (DO) in the CentERpanel. The CentERpanel is based upon a representative sample of the Dutch adult population who are interviewed weekly over the Interne on a large variety of topics. People without access to Internet get the necessary equipment to participate so that also the non-Internet part of the population is covered. The fact that there are no personal interviews minimizes the risk that the answers suffer from social desirability bias. The CentERpanel also incorporates the annual DNB Household Survey (DHS), in which respondents answer questions related to different aspects of their financial situation, like income and wealth. This readily provides us with many background characteristics of the respondents. 2,840 household members above

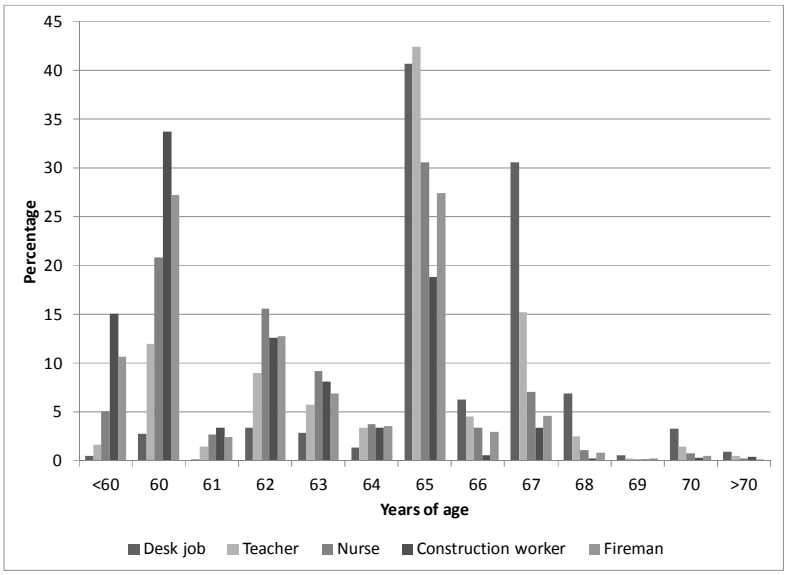
the age of 15 were asked to participate in the DO survey. 1,845 of them took part, giving a participation rate of 65%. Data collection took place in the week of May 11th through May 16th 2012, at a time when an increase of the statutory retirement age was under consideration (see Section 3). The descriptive statistics we present are weighted with regard to age, gender, education and individual annual income to correct for unit-non response and obtain a representative view of the Dutch population.

In the DO survey respondents were directly asked what they think about the demanding nature of specific occupations and about reasonable retirement ages for these occupations. They were also asked whether they would be willing to contribute to an early retirement scheme for such occupations. Respondents were first given an introduction into five fictive vignette persons with various occupations, emphasizing that these persons all had the same income and age and the same work experience – The only difference is their occupation. The five specific occupations are construction worker, teacher, nurse, person with a desk job, and fireman. All respondents answered questions about all these five occupations. Appendix A shows the exact wording of the questions. The order of the questions and the gender of the vignette persons are randomized over the respondents, with the exception of construction worker and fireman. For these two occupations all respondents got male names.

First, the respondents were asked what they think is a reasonable retirement age for the various occupations. An example of such a question (desk job) is the following:
John has worked for 30 years at a desk job. What do you think is a reasonable retirement age for John?
Respondents could answer 'younger than 60', '60', '61', ... , '70', or 'older than 70'.
Figure 1 presents the sample distribution of the answers. The large differences across occupations seem plausible and raise confidence that respondents understood the questions. The answers indicate that according to most respondents, early retirement is reasonable for construction workers, whereas people with desk jobs should retire later. The mean reasonable retirement age for the occupations ranges from almost 62 years of age for the construction worker to almost 66 years of age for the individual with a desk job.[4]

[4] For the occupation of teacher, nurse and fireman the mean reasonable retirement age amounts 64.3, 63 and 62.5 years of age, respectively.

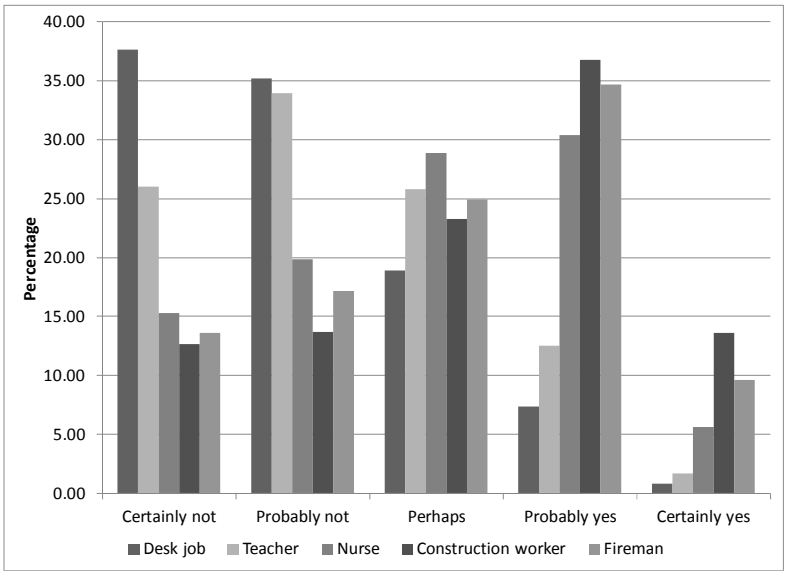
Figure 1 Reasonable retirement ages



Explanation: distribution of answers to the question: 'What do you think is a reasonable retirement age for ... (fictive name with listed occupation)?' N=1,840. Source DO, own computations

After answering some other questions, the respondents indicated whether they were willing to contribute, through income tax payments, to an early retirement scheme for the five fictive persons. Respondents answered on a five point scale ranging from 'certainly not' to 'certainly yes'.

Figure 2 Willingness to contribute to early retirement schemes

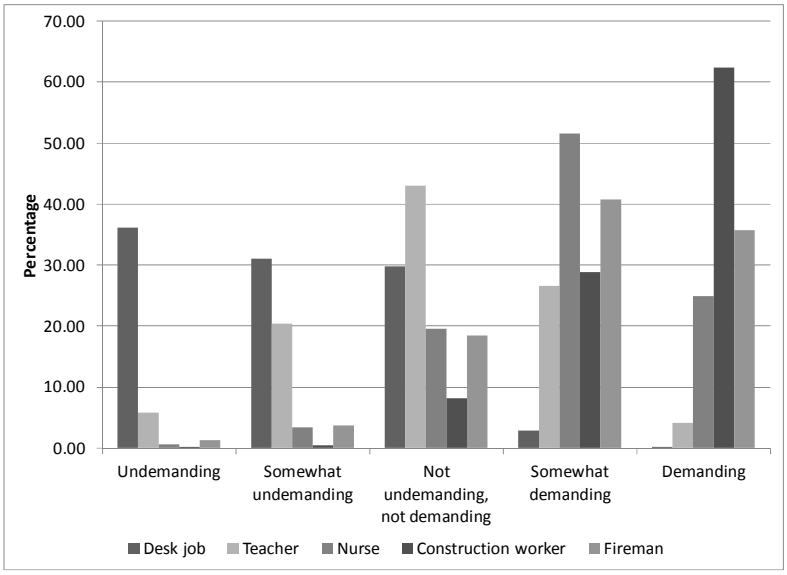


Explanation: Answers to the question: 'Are you willing to contribute as a tax payer to an early retirement scheme for ... (fictive name with listed occupation)?' N=1,835. Source DO, own computations

Figure 2 shows the sample distribution of the answers. Construction workers are not only considered as reasonable early retirees but respondents are also often willing to contribute to

their early retirement schemes. Approximately 50% of the respondents indicate they are certainly or probably willing to contribute to an early retirement scheme for construction workers, much more than for any of the other four occupations. It is possible that respondents show high willingness to pay, because they expect to be able to benefit of such schemes themselves. But the data also show that only 9% of the respondents identify themselves with the profession of 'construction worker', suggesting that many respondents are willing to contribute even if they do not expect to benefit directly from these schemes.

Figure 3 How demanding is each occupation?

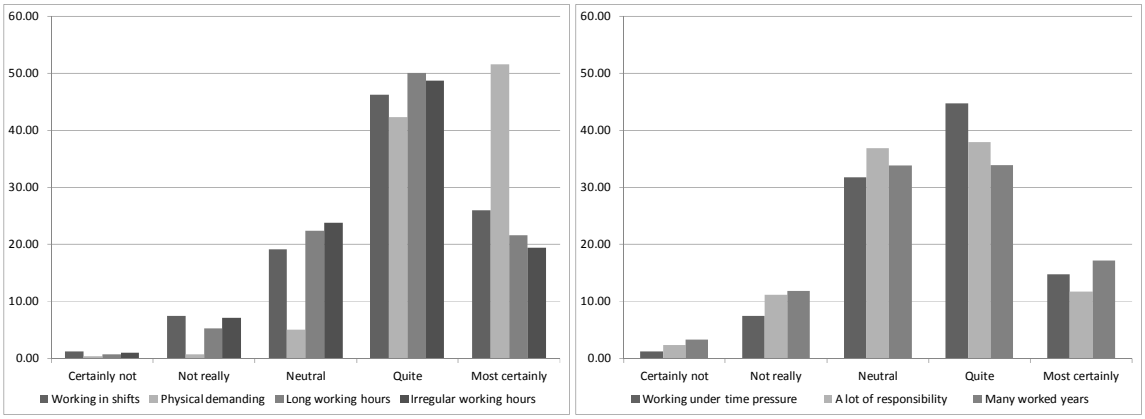


Explanation: answer to the question: "Do you think that the occupation of ... (fictive name with listed occupation) is demanding?" *N*=1,835. Source: DO, own computations

The last vignette-related question asked the opinion of the respondents regarding how demanding they think the occupation of the fictive person is. For example:
'Do you think that the occupation of John (has a desk job) is demanding?'
This question was asked for each of the five professions. Respondents answered on a five-point scale ranging from 'undemanding' to 'demanding'. Figure 3 shows that respondents think that construction workers have the most demanding of the five occupations, followed by nurses and firemen. The occupations of teachers and especially individuals with desk jobs are considered less demanding.

The next questions asked to what extent certain job properties make an occupation demanding.
The properties range from physically demanding work to working under time pressure. Figure 4 shows that occupations are primarily considered demanding due to the physical workload, followed by working in shifts and working long hours or in an irregular manner.

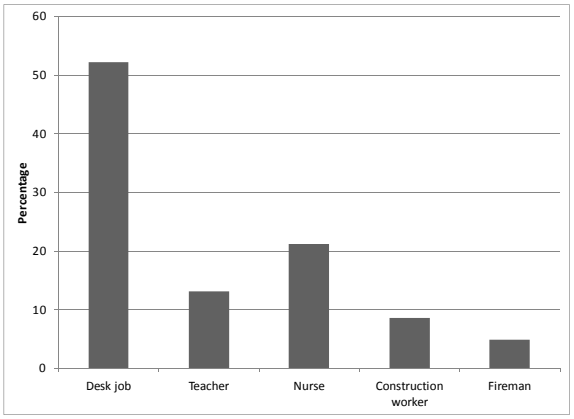
Figure 4 What makes an occupation demanding?



Explanation: answer to the question: "What attribute makes an occupation demanding in your view?" N=1,834. Source: DO, own computations

Finally, the respondents are asked with which of the five occupations they identify themselves most. They were forced to choose one of the five occupations. Figure 5 shows that the majority of the respondents identify themselves with working in a desk job.[5]

Figure 5 With which of the five occupations do respondents identify themselves?



Explanation: answer to the question: "With which person does your occupation most closely compare?" N=1,787. Source: DO, own computations.

The descriptive statistics above suggest that most respondents find it reasonable that workers with demanding occupations retire earlier than others, and are also willing to contribute to this by paying taxes. Several competing explanations, however, could explain these findings. We have already mentioned the possibility of self-interest, stemming from those who expect to benefit themselves. Others may actually be biased by their own retirement scheme (as older workers for instance are typically allowed earlier retirement than

[5] Descriptive statistics show that the age distribution of the respondents does not vary substantially over the various occupations.

younger workers, due to cohort-related shifts in pension rules) or because they identify with some attributes of the vignette (being a woman, or a young employee etc ...). In the next section we introduce an econometric model that can account for these different explanations.

It should be noted that the survey questions are hypothetical and not incentivized. When, for example, respondents say they would be willing to contribute to an early retirement scheme of a certain occupation, we cannot guarantee that they would actually contribute to such a scheme if given the actual choice. The questions also do not provide information on how much they should contribute, so the answers do not reflect an actual trade off but more an attitude towards special arrangements for some occupations and not others. We therefore think more value should be attached to the qualitative differences across occupations than to the absolute levels of the willingness to contribute, etc.

5 Model and results

5.1 Demanding occupations and reasonable retirement age

The following model estimates the relationship between the extent to which certain occupations are perceived to be demanding and the associated reasonable retirement ages. Respondents evaluate how demanding the five occupations are according to equation (1):

(1) $$y_{ij}^{*} = X_i'\delta_j + Z_i\alpha_j + W_i'\lambda_j + \vartheta_i + u_{ij}$$

The latent dependent variable y_{ij}^{*} increases in the extent that respondent *i (i=1, ... ,N)* thinks occupation *j (j=1, ... ,5)* is demanding. This depends on respondent characteristics (X_i), on which job the respondent identifies with (Z_i), and on which characteristics make a job demanding in the view of the respondent (W_i). Unobserved heterogeneity across respondents is included via ϑ_i; for a given respondent, this term is the same for all occupations and represents the respondent's tendency to see any occupation as demanding. Finally, an idiosyncratic error term is included, assumed to be drawn from a standard normal distribution ($u_{ij} \sim N(0,1)$), independent of the other terms on the right hand side of equation (1) and independent across occupations.

The latent dependent variable is not observed. Instead, a respondent answers in five distinct categories, from 'undemanding' (1) to 'demanding' (5). This is captured using an ordered response equation:

(2) $$Y_{ij} = k \; if \; c_{k-1} < y_{ij}^{*} \leq c_k$$
$$with \; 1 \leq k \leq 5, c_0 = -\infty \; and \; c_5 = \infty$$

The equation for the reasonable retirement ages for the five occupations is given by:

$$R_{ij} = \gamma_j y_{ij}^* + X_i'\eta_j + Z_i\beta_j + \rho_i + \varepsilon_{ij} \quad (3)$$

The reasonable retirement age R_{ij} for respondent i and occupation j depends on the same variables as in equation (1), except that it does not include the variables W_i referring to the respondent's view on which job characteristics make an occupation demanding. These variables are assumed to affect the reasonable retirement age only through their effect on how demanding an occupation is considered (y_{ij}^*). Unobserved respondent specific heterogeneity is denoted by ρ_i. The idiosyncratic errors ε_{ij} are assumed to be drawn from $N(0, \sigma_\varepsilon^2)$, independent of each other and of the other terms on the right hand side of (1) and (3).

Combining equations (1) and (3) leads to:

$$R_{ij} = W_{ij}'\gamma_j\lambda_j + X_i'(\gamma_j\delta_j + \eta_j) + Z_i(\beta_j + \alpha_j\gamma_j) + \rho_i + \gamma_j\vartheta_i + \varepsilon_{ij} + \gamma_j u_{ij} \quad (4)$$

Equation (4) shows that with the identifying assumption that job characteristics do not influence the reasonable retirement age directly, γ can be identified. The unobserved heterogeneity terms in equations (1) and (3) are assumed to be drawn from a bivariate normal distribution, independent of the error terms and all the explanatory variables in (4):

$$\begin{pmatrix}\vartheta_i \\ \rho_i\end{pmatrix} = N\left(\begin{pmatrix}0\\0\end{pmatrix}, \begin{pmatrix}\sigma_\vartheta^2 & \tau\sigma_\rho\sigma_\vartheta \\ \tau\sigma_\rho\sigma_\vartheta & \sigma_\rho^2\end{pmatrix}\right).$$

This implies that the unobservable parts of equations (1) and (3) are correlated if τ is not equal to zero. The parameters of this model are estimated simultaneously using maximum simulated likelihood with 100 Halton draws.[6] Appendix B presents details of the (simulated) likelihood. The independence assumptions on the error terms imply that the conditional likelihood given the unobserved heterogeneity terms can be written as the product of five contributions for the five occupations, each of which as the product of a density (for R_{ij}, using (4)) and a conditional probability (for Y_{ij} given R_{ij}, using (1)). The unconditional likelihood is the expected value of the conditional likelihood over the unobserved heterogeneity terms and it can be approximated using a simulated mean.

[6] For Halton draws the STATA program mdraws is used (also see Cappellari and Jenkins, 2006). A higher number of draws does not affect the results.

Table 1 Key estimation results for evaluation how demanding occupations are (equation (1))

	Evaluation how demanding occupations are				
	(1) Desk job	(2) Teacher	(3) Nurse	(4) Construction Worker	(5) Fireman
Shifts: Quite	0.167**	0.119	0.192**	0.025	0.235***
	(0.079)	(0.077)	(0.078)	(0.087)	(0.078)
Shifts: Certainly yes	0.051	0.164*	0.373***	0.042	0.326***
	(0.100)	(0.096)	(0.099)	(0.113)	(0.099)
Physical: Quite	-0.662***	-0.194	0.196	0.986***	0.602***
	(0.133)	(0.130)	(0.131)	(0.134)	(0.131)
Physical: Certainly yes	-0.927***	-0.189	0.504***	2.195***	1.067***
	(0.136)	(0.132)	(0.134)	(0.143)	(0.134)
Time Pressure: Quite	0.383***	0.268***	-0.001	-0.217***	-0.185**
	(0.075)	(0.072)	(0.074)	(0.084)	(0.074)
Time Pressure: Certainly yes	0.475***	0.486***	0.275**	-0.335**	-0.300**
	(0.117)	(0.113)	(0.118)	(0.135)	(0.117)
Responsibility: Quite	0.285***	0.277***	0.247***	0.027	0.106
	(0.074)	(0.071)	(0.073)	(0.083)	(0.073)
Responsibility: Certainly yes	0.571***	0.444***	0.415***	0.078	0.276**
	(0.127)	(0.124)	(0.130)	(0.148)	(0.129)
Irregular working hours: Quite	-0.007	0.160**	0.219***	0.084	0.158**
	(0.079)	(0.077)	(0.079)	(0.088)	(0.079)
Irregular working hours: Certainly yes	0.016	0.121	0.496***	0.074	0.415***
	(0.121)	(0.118)	(0.122)	(0.140)	(0.122)
Long working hours: Quite	0.113	0.086	0.097	0.037	0.122
	(0.077)	(0.074)	(0.076)	(0.084)	(0.076)
Long working hours: Certainly yes	-0.152	0.047	-0.070	0.308**	0.305***
	(0.111)	(0.107)	(0.110)	(0.129)	(0.111)
Many worked years: Quite	0.025	0.150**	0.248***	0.200**	0.139**
	(0.070)	(0.068)	(0.070)	(0.078)	(0.070)
Many worked years: Certainly yes	0.003	0.216**	0.545***	0.451***	0.109
	(0.095)	(0.091)	(0.096)	(0.115)	(0.095)
Gender of fictive person (=1 if female)	0.127**	0.126**	0.214***	-	-
	(0.057)	(0.056)	(0.058)		
Teacher (self-identification)	-0.215**	0.426***	0.193**	0.111	0.005
	(0.089)	(0.087)	(0.090)	(0.104)	(0.090)
Nurse (self-identification)	-0.417***	-0.188**	0.010	-0.064	-0.064
	(0.082)	(0.079)	(0.082)	(0.095)	(0.082)
Construction worker (self-identification)	-0.267**	-0.283***	-0.345***	0.010	-0.191*
	(0.110)	(0.105)	(0.108)	(0.128)	(0.108)
Fireman (self-identification)	-0.244*	-0.140	-0.226	0.048	0.310**
	(0.143)	(0.138)	(0.142)	(0.166)	(0.145)
Constant	-	0.516	1.513***	2.098***	2.623***
		(0.451)	(0.463)	(0.504)	(0.463)
σ_ϑ			0.610***		
			(0.021)		
Log likelihood			-26494		
Number of observations			1771		

Standard errors in parentheses, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. Baseline respondent answers the questions with a male name for the fictive person, self-identifies with having a desk job and considers the extent to which various job attributes make a job demanding to be 'certainly not', 'not really' or neutral. Background controls (gender, education, age, age squared, employment status and household income) are included. For full set of results (including background controls), see Appendix E.

Table 1 presents the estimates of equation (1).[7] The bottom part of this table shows that self-identification matters in the evaluation of which occupations are demanding, keeping perceived job characteristics constant. Especially respondents who identify their own job a desk job, teacher, or fireman consider this job as more demanding than other respondents. But all respondents, regardless of their own job, think that construction worker is a demanding occupation. Interestingly, teachers consider the job of a nurse as more demanding than nurses themselves do. Teachers, nurses, construction workers and firemen consider desk jobs as less demanding than those with a desk job themselves do. Gender differences also appear present: for the three occupations where male or female names were used for the fictive persons, the jobs of female fictive persons are evaluated as more demanding.

The respondents tend to focus on physical demands: predictions on the basis of the estimates in Table 1 show that construction workers have the most demanding occupation, followed by firemen, nurses, teachers, and individuals with a desk job.[8] Moreover, Table 1 shows that the physical burden makes construction work demanding. Other attributes also play a role, like working in shifts, many years worked, and irregular working hours in the case of nurses. A lot of responsibility makes desk jobs demanding.

The estimation results for the reasonable retirement age (equation 3) show a similar picture (Table 2). Keeping all other variables constant, including how demanding the job is perceived to be, construction workers are allowed to retire at the earliest age. But self-identification with the fictive persons seems to be a smaller issue here, as none of the coefficients are significant at the 5% level. Still, there is an indirect effect: Self-identification influences how demanding occupations are, and this affects the reasonable retirement age of an occupation - as indicated by the significant γ-coefficients. Female fictive persons are allowed to retire about three months earlier than male fictive persons who have the same job and whose job is evaluated as equally demanding.
If occupations are perceived as more demanding, this has a large effect on the reasonable retirement age. For instance, consider the occupation of construction worker and the perception that physical work makes a job demanding.

[7] Appendix D shows the descriptive statistics of the background variables of the estimation sample.
[8] The calculation involves computation of the mean of the predicted values for the latent variable of equation (1). Fireman and nurse are close to each other for the second place in this ranking.

Table 2 Key estimation results for evaluation of the reasonable retirement age

	Evaluation of reasonable retirement age				
	(1)	(2)	(3)	(4)	(5)
	Desk job	Teacher	Nurse	Construction Worker	Fireman
γ_j	-0.552***	-0.815***	-0.836***	-0.738***	-0.960***
	(0.036)	(0.031)	(0.032)	(0.032)	(0.030)
Gender of fictive person (=1 if female)	-0.258***	-0.248***	-0.241***	-	-
	(0.080)	(0.081)	(0.082)		
Teacher (self-identification)	-0.091	-0.061	0.052	0.031	0.021
	(0.145)	(0.147)	(0.148)	(0.152)	(0.148)
Nurse (self-identification)	-0.129	-0.175	-0.211	-0.142	-0.100
	(0.132)	(0.133)	(0.134)	(0.138)	(0.135)
Construction Worker (self-identification)	-0.056	0.029	-0.110	0.228	-0.099
	(0.185)	(0.186)	(0.187)	(0.193)	(0.188)
Fireman (self-identification)	0.052	-0.283	-0.253	0.010	0.032
	(0.242)	(0.243)	(0.245)	(0.252)	(0.248)
Constant	66.697***	66.790***	66.328***	63.840***	66.024***
	(0.580)	(0.641)	(0.654)	(0.656)	(0.683)
σ_ε			1.365***		
			(0.010)		
σ_ρ			1.587***		
			(0.03)		
τ (correlation coefficient)			0.051		
			(0.033)		
Log likelihood			-26494		
Number of observations			1771		
standard deviation *(sd)* increase in demanding occupation $(= \gamma_j * sd)$	-0.751***	-1.042***	-1.118***	-1.066***	-1.254***
	(0.050)	(0.039)	(0.042)	(0.046)	(0.040)

Standard errors in parentheses, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. Baseline respondent has a desk job and answers the questions with a male name for the fictive person. Background controls (gender, education, age, age squared, employment status and household income) are included. For full set of results (including background controls), see Appendix E. Bottom row is not estimated in the model and it shows the result of the calculation: $\gamma_j * sd$

The estimates imply that the reasonable retirement age for a construction worker decreases by 1.6 years if the respondent thinks physical work certainly makes an occupation demanding compared to when the respondent does not think physical work makes a job demanding.[9] An alternative way is to consider the impact of an increase of one standard deviation in how demanding occupations are on the reasonable retirement age. This increase would reduce the reasonable retirement with one year on average (also see table 2). The magnitude of the effect can also be computed for the baseline respondent, who thinks a particular occupation is demanding instead of undemanding. The baseline respondent is a higher educated male with a net household income larger than 2600 Euros (also see appendix E). The resulting difference between the baseline respondent who thinks that the job is undemanding versus a baseline respondent who thinks that a job is demanding amounts to

[9] This is the difference between answering the highest category ('most certainly') and the three lowest categories ('certainly not', 'not really' or 'neutral'). See figure 4. Table 1 shows that the corresponding coefficient (=2.195). Then this leads ceteris paribus to $\gamma_j * 2.195 = -0.738 * 2.195 = -1.62$ years.

almost three years earlier retirement in the case of fireman and 1.6 years for people with desk jobs.[10] This is the same order of magnitude as the increase in the statutory retirement age in the Netherlands (see section 3).

Unobserved heterogeneity is present and sizeable. The order of magnitude can be compared to the standard deviation of the idiosyncratic error term. The standard deviation of the idiosyncratic error term amounts to 1 (by normalization), whereas the standard deviation of the unobserved heterogeneity amounts 0.61 in the evaluation of the demanding occupations (see table 1). In the evaluation of the reasonable retirement age the standard deviation of the idiosyncratic error term amounts 1.37 (see table 2), while the standard deviation of the unobserved heterogeneity term amounts 1.59. The unobserved heterogeneity terms are slightly positively correlated, but the correlation is not significant.

Except for teachers, self-identification has no significant effect on the assessment of the reasonable retirement age. The evaluation of teachers by teachers forms an exception. It might be that non-teachers have a different view on the demanding nature of these occupations than teachers have. Table 3 shows the marginal effects of self-identification on the reasonable retirement age. This consists of a direct and an indirect part. The indirect effect works through the effect of self-identification on how demanding occupations are. Except for the case of the construction worker, individuals who self-identify with their occupation, indicate a lower reasonable retirement age. The effect is 5 months at most, in the evaluation of and by teachers and this is the only significant effect.

Table 3 Marginal effects of self-identification on the reasonable retirement age

Evaluation of fictive person as:	**Self-identification with:** Teacher	Nurse	Construction worker	Fireman
Desk job	0.027	0.101	0.092	0.186
	(0.148)	(0.135)	(0.188)	(0.245)
Teacher	-0.409***	-0.021	0.259	-0.169
	(0.155)	(0.143)	(0.199)	(0.258)
Nurse	-0.110	-0.219	0.179	-0.064
	(0.156)	(0.142)	(0.199)	(0.258)
Construction worker	-0.050	-0.095	0.221	-0.026
	(0.153)	(0.140)	(0.195)	(0.253)
Fireman	0.017	-0.039	0.084	-0.266
	(0.161)	(0.147)	(0.204)	(0.266)

Standard errors in parentheses, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. The magnitude of the marginal effect is in years of age. The baseline respondent self-identifies with a desk job.

[10] The model estimates the thresholds for the demanding occupation equation (see also Appendix D). The baseline respondent who thinks that an occupation is somewhat undemanding is defined at the average of the first two thresholds (=0.39). The baseline respondent who thinks that an occupation is somewhat demanding is defined at the average of the last two thresholds (=3.21). The difference (=2.824) is multiplied with the various γ's to get the estimated effect on the reasonable retirement age. For fireman the effect is largest: 2.7 years earlier retirement; for desk jobs it is the smallest: 1.6 years earlier retirement.

In a robustness check, we included the opinion of the respondents about the increase of the statutory retirement age in the Netherlands as an additional regressor, since the feelings about the increase of the statutory retirement age in the first pillar could matter for the reported reasonable retirement ages. For instance, respondents feeling negative about this reform may indicate that each fictive person should be allowed to retire early. In a previous questionnaire respondents were asked to choose amongst several measures to make the first pillar pension scheme sustainable. The measures included lower benefits, a higher pension premium, and an increase in the statutory retirement age. Appendix G lists the exact question and the distribution of the answers, as well as the complete estimates of a full model in which the answer to this question is added on the right hand side of the equation for the reasonable retirement age. These results show that, as expected, respondents who think the statutory retirement age should be increased also give higher reasonable retirement ages than respondents who prefer other measures. Inclusion of this in the model, however, does not change any of the results on the variables of interest.

5.2 Demanding occupations and willingness to contribute to an early retirement scheme

In this section we model the relationship between the extent to which an occupation is perceived to be demanding and whether respondents are willing to contribute to an early retirement scheme for that occupation through paying additional (income) taxes. This model closely resembles the model of the previous section. Respondents (*i=1, ... , N*) evaluate how demanding certain occupations (*j=1,...,5*) are according to equations (1) and (2). The respondents also indicate whether they are willing to contribute to an early retirement scheme for certain professions. This is modeled using an ordered response equation:

$$C_{ij}^{*} = \kappa_j y_{ij}^{*} + X_i'\mu_j + Z_i\eta_j + \phi_i + \psi_{ij} \tag{5}$$

$$C_{ij} = l \; if \; d_{l-1} < C_{ij}^{*} \leq d_l \tag{6}$$

$$with \; 1 \leq l \leq 5, d_0 = -\infty \; and \; d_5 = \infty$$

The willingness to contribute to an early retirement scheme C_{ij}^{*} for respondent *i* and occupation *j* depends on the same variables as in equation (3), including the perception how demanding occupation *j* is perceived to be. The respondent specific unobserved heterogeneity term in this equation is denoted by ϕ_i. The idiosyncratic error ψ_{ij} is assumed to be standard normally distributed. The respondents answer in five distinct answer categories to what extent they want to contribute to early retirement schemes of certain professions (equation (6)).

Since unobserved individual characteristics explaining the opinion about demanding occupations could be related to those determining the willingness to contribute to an early retirement scheme, we assume, the two unobserved heterogeneity terms are bivariate normal, independent of the covariates: $\begin{pmatrix}\vartheta_i\\ \phi_i\end{pmatrix} \sim N\left(\begin{pmatrix}0\\0\end{pmatrix}, \begin{pmatrix}\sigma_\vartheta^2 & \tau\sigma_\phi\sigma_\vartheta\\ \tau\sigma_\phi\sigma_\vartheta & \sigma_\phi^2\end{pmatrix}\right)$. This implies an additional correlation between the error terms of equations (1) and (5) if the parameter τ is not equal to zero. Equations (1), (2), (5) and (6) are estimated simultaneously using Simulated Maximum Likelihood with 100 Halton draws (see Cappelari and Jenkins, 2006).[11] Appendix C provides details of the likelihood.

Table 4 Key estimation results for the willingness to contribute to (early) retirement schemes

	Evaluation of willingness to contribute				
	(1) Desk job	(2) Teacher	(3) Nurse	(4) Construction Worker	(5) Fireman
κ_j	1.492***	1.294***	0.766***	0.564***	0.654***
	(0.073)	(0.060)	(0.042)	(0.037)	(0.035)
Gender of fictive person (=1 if female)	-0.123	-0.014	0.126	-	-
	(0.093)	(0.086)	(0.078)		
Teacher (self-identification)	0.149	-0.061	-0.021	-0.059	-0.032
	(0.189)	(0.185)	(0.184)	(0.189)	(0.185)
Nurse (self-identification)	0.716***	0.333**	0.375**	0.421**	0.370**
	(0.175)	(0.168)	(0.168)	(0.173)	(0.170)
Construction Worker (self-identification)	0.381	0.364	0.545**	0.656***	0.590**
	(0.239)	(0.232)	(0.231)	(0.237)	(0.232)
Fireman (self-identification)	0.552*	0.235	0.463	0.198	0.468
	(0.302)	(0.293)	(0.290)	(0.297)	(0.293)
Constant	-	-0.749	-0.966	-0.304	-0.003
		(0.578)	(0.606)	(0.653)	(0.630)
σ_ϕ			2.731***		
			(0.077)		
τ $(correlation\ coefficient)$			0.516***		
			(0.021)		
number of observations			1771		
Log likelihood			-18096		

Standard errors in parentheses. *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. Baseline respondent self-identifies their job with a desk job and has a male name for the fictive person in answering the questions. Background controls (gender, education, age, age squared, employment status and household income) are included. For complete results (including background controls), see Appendix F.

[11] A higher number of draws does not affect the magnitude of the estimated parameters.

If respondents find an occupation more demanding, they are also willing to contribute more to an early retirement scheme for that occupation. Table 4 shows these positive effects (κ_j).[12] Table 5 shows the implied marginal effects. It shows that respondents are 30 to 40 percentage points more likely to contribute to the early retirement scheme when the extent to which an occupation is considered more demanding increases by one standard deviation. This is evaluated for the proportion of the sample that considers the occupation to be 'somewhat demanding' or 'demanding'. The difference in the willingness to contribute between a typical individual who evaluates an occupation as demanding and a typical individual who considers the same occupation undemanding, would amount to roughly 40 to 70 percentage points.[13]

Unobserved heterogeneity is significantly present. Table 4 shows that the standard deviation of the willingness to contribute amounts to 2.73, while the standard deviation of the idiosyncratic error term amounts to 1. Moreover, a sizeable and significant correlation between the two unobserved heterogeneity terms of 0.52 is found. This indicates that respondents with a higher willingness to contribute in general typically also tend to evaluate occupations as more demanding.

Table 5 Impact of one standard deviation increase in demanding occupation on willingness to contribute to early retirement scheme

Desk job	Teacher	Nurse	Construction worker	Fire man
28.38***	39.44***	38.12***	33.03***	33.70***
(1.38)	(1.83)	(2.09)	(2.18)	(1.78)

Standard errors in parentheses. *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. Each marginal effect is evaluated for the proportion of the sample that considers the occupation in the column to be demanding or very demanding. Numbers are in percentage points. The baseline respondent is the same as in table 4.

Table 4 also shows that self-identification with a teacher or a fireman does not lead to a higher willingness to contribute for any other occupation compared to self-identification with having a desk job. Nurses are the other extreme case: if respondents identify themselves with a nurse, they are willing to contribute to an early retirement schemes of every occupation. Construction workers are willing to contribute to retirement schemes of nurses,

[12] The estimates of the coefficients in equation (1) are similar to those in Table 1 (also see appendix F) and are therefore not presented here.
[13] The difference between two such individuals amounts roughly two standard deviations. This computation evaluates the willingness to contribute at two different points on the normal distribution: one standard deviation below and one standard deviation above the mean. With a difference of one standard deviation the results are close to a computation with marginal effects (table 5).

construction workers and firemen. In combination with the indirect effects, respondents are always willing to contribute to retirement schemes of their own occupations (Table 6). They probably expect to benefit themselves from such arrangements.[14] But respondents also indicate that they are willing to contribute to retirement schemes of other occupations than their own occupation.

Table 6 Marginal effects of self-identification on the willingness to contribute to (early) retirement schemes

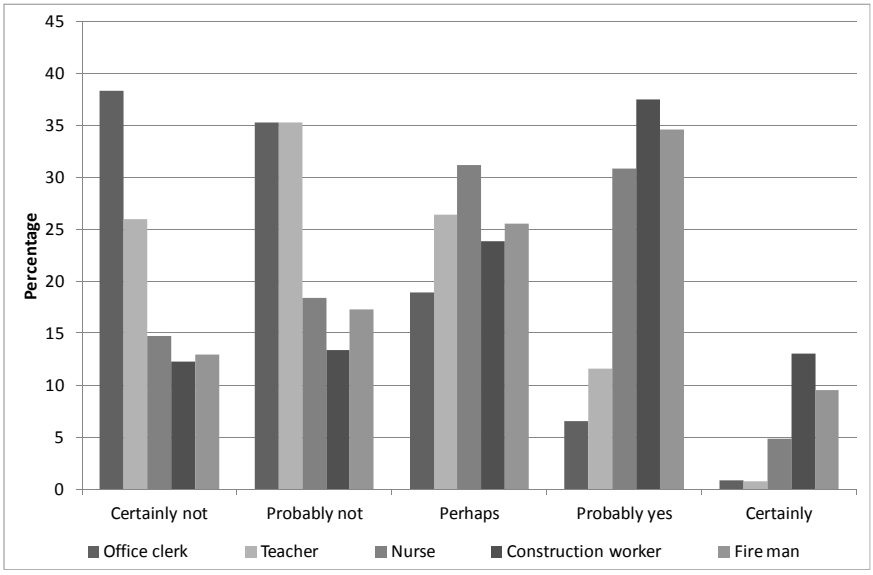
	Self-identifies with:			
Evaluation of the fictive person as:	Teacher	Nurse	Construction worker	Fireman
Desk job	-2.03	2.43	-0.03	4.72
	(3.27)	(3.01)	(4.08)	(5.22)
Teacher	12.71**	3.30	1.05	3.94
	(5.00)	(4.70)	(6.33)	(8.02)
Nurse	5.51	15.72**	11.15	12.80
	(7.47)	(6.87)	(9.38)	(11.85)
Construction worker	0.35	16.19**	27.17***	9.85
	(7.84)	(7.20)	(9.77)	(12.36)
Fireman	-0.56	13.54*	19.05**	28.53**
	(7.76)	(7.14)	(9.72)	(12.31)

Standard errors in parentheses, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. The magnitude of the marginal effect is evaluated for the proportion of the sample that considers the occupation in the row to be demanding or very demanding. Numbers are in percentage points. Benchmark: respondents who self-identify with having a desk job.

Figure 6 shows whether people are willing to contribute to retirement schemes of occupations that they do not identify themselves with. It shows that almost half of the respondents *not identifying themselves with construction worker* indicate that they are probably or certainly willing to contribute to an early retirement scheme of construction workers. The willingness to contribute to such a scheme is somewhat smaller for firemen, and substantially smaller for the other three occupations. Only 6 percent of the respondents not in a desk job are probably or certainly willing to contribute to a retirement scheme of office clerks. Respondents are apparently willing to contribute to the retirement schemes of other occupations, but only if they perceive the occupations as demanding.

[14] Re-estimation of this model with the opinion of about the pension reform in the Netherlands shows that the results do not change. For details, see appendix G.

Figure 6 Respondents willing to contribute to retirement schemes of occupations other than their own



For the evaluation of the willingness to contribute for the occupations, the respondents with the same occupation are omitted. For instance, in the evaluation of office clerk the respondents, who self-identify with office clerks, are left out. Source: descriptive statistics (DO), own computations

6 Conclusion

This paper relates the perception about how demanding occupations are to what people consider a reasonable retirement age and the willingness to contribute to an early retirement schemes for specific occupations. How demanding an occupation is, determines to a large extent the reasonable retirement age for that occupation. On average, the respondents of our survey think it is justified that a worker in a demanding occupation can retire approximately two years earlier. This difference is equal to the increase in the statutory retirement age in the Netherlands for the coming years. The respondents also indicate they are willing to contribute to an early retirement scheme for demanding occupations by paying higher taxes. This is notable as the Dutch government in the end did not distinguish between demanding and undemanding occupations when increasing the statutory retirement age.

The relationship between physical burden, demanding occupations and reasonable retirement ages is in line with other studies. Joulain and Mullet (2001) find that reasonable retirement ages are lower for occupations perceived as more physical demanding. They also find that cognitive or organizational attributes are not associated with the reasonable retirement age. Van Dalen et al. (2010) find that both employers and employees view older workers as less

productive. A reason for this is the perception that hard skills (physical or cognitive abilities) matter more for the assessment of productivity.

Individuals rank the various occupations consistently in terms of how demanding occupations are and this relates to the reasonable retirement age and the willingness to contribute to early retirement schemes. We find that desk jobs are regarded as less demanding occupations. Accordingly, they are attributed a higher reasonable retirement age and the public is less willing to contribute to an early retirement scheme for people with desk jobs. For construction workers the opposite is the case. Firemen are close to construction workers, teachers are closer to desk jobs, and nurses are in between. This corresponds to the view that the Dutch population generally thinks that physical burden makes an occupation demanding.

Differences among reasonable retirement ages remain when correcting for self-identification. Individuals are often also willing to contribute to the retirement schemes of demanding occupations that are not similar to their own occupation. For instance, almost half of the respondents who do not identify themselves with construction worker indicate that they are probably or certainly willing to contribute to a retirement scheme for construction workers. This may also mean that they regard disability as less favorable than retirement. But we also find an effect of self-identification. For instance, respondents consider the job of teacher as more demanding if their own job is similar to that of a teacher. Accordingly, respondents are more supportive of contributing to the retirement schemes and assign a lower reasonable retirement age for the job they most identify with.

The finding that individuals are often willing to contribute to an early retirement scheme of demanding occupations that are dissimilar to their own could be grounded in reciprocation. Fong et al. (2005) argue that there is support for policies that rely on reciprocation. For instance, individuals are willing to financially support those who are struck by bad luck but not those who are poor because they are unwilling to work. An interpretation of our findings is that many respondents think that workers in demanding occupations contribute to society at the cost of their own health, and deserve to be compensated for this. Earlier retirement is an attractive form of compensation since their deteriorated health and the demanding nature of their jobs make it difficult to continue working. Future research could look further into this. Perugini et al. (2003) describe questions to measure reciprocity of individuals and have validated these questions in experiments. It would be interesting to see whether individuals who are reciprocal according to their index are indeed more willing to contribute to the early retirement schemes of demanding occupations.

What do our findings imply for public policy? The results show that the Dutch public supports special measures facilitating earlier retirement for physically demanding occupations, but do not provide insight in how this can be implemented. As discussed in Section 1, differentiation of the eligibility age for the first pillar state pensions has been discussed but is considered infeasible as every occupation must be classified according to the attributes that make it demanding or not. Moreover, account has to be taken of the fact that individuals may engage in strategic behavior by switching occupations at a later age to qualify for earlier retirement (Ravesteijn et al., 2013) and it could add rigidity to the labor market. Repairing the gap in first pillar pensions through the second pillar is expensive, particularly for the many physically demanding jobs that are not well paid, so that the state pension is a large part of total pension income.

Alternatively, the first pillar eligibility age could be made dependent on the life time number of worked years instead of the occupation (possibly with adjustment for involuntary unemployment, disability, or career interruptions due to young children, for example). This is the system that has recently been adopted in Germany (OECD, 2013). Such a policy is easier to implement and induces less problems concerning strategic behavior. Individuals with physically demanding occupations would benefit from such an arrangement, since they often have low education level and start working at a relative early age. Similar policies could also use other proxies to drive the differentiation in the statutory retirement age, such as (life-time) income.

It is important to note, however, that such policies could also entail costs. For instance, a lower retirement age for demanding occupations may lead to a shift from disability at the end of working life to early retirement. This could diminish incentives for the employer to make occupations less demanding, for example by reducing heavy lifting or hazardous or stressful activities, as they might find it easier to redirect their employees into early retirement. It is up to policy makers to strike a balance in this trade-off.

Lastly, this study does not consider any alternative policy to the differential reduction in retirement age. Investing in the technological improvement of demanding occupations, increasing flexibility of the job market at later ages or pricing compensating differentials differently, are some of the candidates that respondents could prefer to early retirement. This is left for future research.

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Appendix A. Survey questions

This appendix lists the questions of the survey on demanding occupations. First the respondents were asked what they thought was a reasonable retirement age for the various fictive persons with different occupations:

We would like to ask you a number of hypothetical questions about the retirement age for various occupations. These questions are not about you, but about a fictive person with a number of characteristics. We would like to hear your opinion this person. John, Henry, Tim, Klaas and Stijn [in case of female names: Joan, Maria, Ann, Klaas and Stijn] *are all 55 years of age. They have worked full-time for the last 30 years. Before that they went to school. Their salaries are all equal.*

John [or Joan] *has worked for 30 years at a desk job. What do you think is a reasonable retirement age for John* [or Joan]*?*

Younger than 60 years of age
60 years of age
61 years of age
62 years of age
63 years of age
64 years of age
65 years of age
66 years of age
67 years of age
68 years of age
69 years of age
70 years of age
Older than 70 years of age

Henry [or Maria] *has taught for 30 years at an elementary school. What do you think is a reasonable retirement age for Henry* [or Maria]*?*
[Respondents see the same answer categories as the previous question]

Tim [or Ann] *has worked as a nurse for the last 30 years. What do you think is a reasonable retirement age for Tim* [or Ann]*?*
[Respondents see the same answer categories as the previous question]

Klaas has worked for 30 years in the construction sector. What do you think is an is a reasonable retirement age for Klaas?
[Respondents see the same answer categories as the previous question]

Stijn has worked for 30 years as a fireman. What do you think is an is a reasonable retirement age for Stijn?
[Respondents see the same answer categories as the previous question]

We would now like to ask you some questions about your willingness to contribute to early retirement schemes for certain occupations. This means that people with certain occupations will have the opportunity to retire earlier than people with other occupations.

Are you willing to contribute as a tax payer to an early retirement scheme for the persons we just described?
John [or Joan] *(has a desk job)*
Certainly not

Probably not
Perhaps
Probably yes
Certainly yes
Henry [or Maria] *(teacher at an elementary school)*
[Respondents see the same answer categories as the previous question]
Tim [or Ann] *(nurse)*
[Respondents see the same answer categories as the previous question]
Klaas (Construction worker)
[Respondents see the same answer categories as the previous question]
Stijn (Fireman)
[Respondents see the same answer categories as the previous question]

Do you think that the following persons have a demanding occupation?
John [or Joan] *(has a desk job)*
Undemanding
Somewhat undemanding
Not undemanding, not demanding
Somewhat demanding
Demanding
Henry [or Maria] *(teacher at an elementary school)*
[Respondents see the same answer categories as the previous question]
Tim [or Ann] *(nurse)*
[Respondents see the same answer categories as the previous question]
Klaas (Construction worker)
[Respondents see the same answer categories as the previous question]
Stijn (Fireman)
[Respondents see the same answer categories as the previous question]

What attributes makes an occupation demanding in your view?
- Working in shifts
certainly not
not really
neutral
quite
Most certainly
- Physically demanding
[Respondents see the same answer categories as the previous question]
- Working under time pressure (work has to be finished within a certain period)
[Respondents see the same answer categories as the previous question]
- A lot of responsibility
[Respondents see the same answer categories as the previous question]
- Irregular working hours
[Respondents see the same answer categories as the previous question]
- Long working days
[Respondents see the same answer categories as the previous question]
- Many worked years (in some occupations it is common to have started working at 16 or 18 years of age)
[Respondents see the same answer categories as the previous question]

To the persons, that indicated they have a job or had a job before, the following question was asked:
With which person does your occupation most closely compare?
John [or Joan] *(has a desk job)*
Henry [or Maria] *(teacher at an elementary school)*

Tim [or Ann] *(nurse)*
Klaas (Construction worker)
Stijn (Fireman)

Appendix B. Likelihood function for model of demanding occupations and reasonable retirement age

This appendix derives the likelihood function of the model in section 4.1. The probability density corresponding to equation (4) is:

(B.1) $$g\left(R_{ij} = r_{ij}\,|W_{ij}, X_i, Z_i, \rho_i, \vartheta_i\right) = \frac{1}{\sqrt{\sigma_\varepsilon^2+\gamma_j{}^2}}\varphi\left(\frac{r_{ij}-W_{ij}'\gamma_j\lambda_j-X_i'(\gamma_j\delta_j+\eta_j)-Z_i(\beta_j+\alpha_j\gamma_j)-\rho_i-\gamma_j\vartheta_i}{\sqrt{\sigma_\varepsilon^2+\gamma_j{}^2}}\right)$$

Equations (1) and (2) combine into:

$$Y_{ij} = 1\ if\ Y_{ij}^* \le c_1 - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j - \vartheta_i$$
$$Y_{ij} = 2\ if\ c_1 - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j - \vartheta_i < Y_{ij}^* \le c_2 - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j - \vartheta_i$$
$$Y_{ij} = 3\ if\ c_2 - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j - \vartheta_i < Y_{ij}^* \le c_3 - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j - \vartheta_i$$
$$Y_{ij} = 4\ if\ c_3 - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j - \vartheta_i < Y_{ij}^* \le c_4 - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j - \vartheta_i$$
$$Y_{ij} = 5\ if\ Y_{ij}^* > c_4 - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j - \vartheta_i$$

For the construction of the individual likelihood contribution the associated probability of equation (1) is conditioned on $\varepsilon_{ij} + \gamma_j u_{ij}$. This conditional distribution is normal: $u_{ij}|(\varepsilon_{ij} + \gamma_j u_{ij}) \sim N\left(\frac{1}{\sigma_\varepsilon}\frac{\gamma_j}{\sqrt{\sigma_\varepsilon^2+\gamma_j^2}}(\varepsilon_{ij} + \gamma_j u_{ij}), 1 - \frac{\gamma_j^2}{\sigma_\varepsilon^2+\gamma_j^2}\right)$ and leads to the following equation:

(B.2)

$$P\left(Y_{ij} = k|W_{ij}, X_i, Z_i, \vartheta_i, \varepsilon_{ij} + \gamma_j u_{ij}\right)$$
$$= \Phi\left(\frac{c_k - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j - \vartheta_i - \frac{1}{\sigma_\varepsilon}\frac{\gamma_j}{\sqrt{\sigma_\varepsilon^2+\gamma_j^2}}(\varepsilon_{ij} + \gamma_j u_{ij})}{\sqrt{1 - \frac{\gamma_j^2}{\sigma_\varepsilon^2+\gamma_j^2}}}\right)$$
$$- \Phi\left(\frac{c_{k-1} - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j - \vartheta_i - \frac{1}{\sigma_\varepsilon}\frac{\gamma_j}{\sqrt{\sigma_\varepsilon^2+\gamma_j^2}}(\varepsilon_{ij} + \gamma_j u_{ij})}{\sqrt{1 - \frac{\gamma_j^2}{\sigma_\varepsilon^2+\gamma_j^2}}}\right)$$

for k = 1, ... , 5

As before, we define for notational purposes: $c_0 = -\infty$ and $c_5 = \infty$

Equation (4) can be rewritten to give an expression for the residuals and inserted in equation (B.2), leading to equation (B.3):

(B.3)

$$P(Y_{ij} = k|W_{ij}, X_i, Z_i, \vartheta_i, \varepsilon_{ij} + \gamma_j u_{ij})$$

$$= \Phi\left(\frac{c_k - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j - \vartheta_i - \frac{1}{\sigma_\varepsilon}\frac{\gamma_j}{\sqrt{\sigma_\varepsilon^2 + \gamma_j^2}}(r_{ij} - W_{ij}'\gamma_j\lambda_j - X_i'(\gamma_j\delta_j + \eta_j) - Z_i(\beta_j + \alpha_j\gamma_j) - \rho_i - \gamma_j\vartheta_i)}{\sqrt{1 - \frac{\gamma_j^2}{\sigma_\varepsilon^2 + \gamma_j^2}}}\right)$$

$$- \Phi\left(\frac{c_{k-1} - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j - \vartheta_i - \frac{1}{\sigma_\varepsilon}\frac{\gamma_j}{\sqrt{\sigma_\varepsilon^2 + \gamma_j^2}}(r_{ij} - W_{ij}'\gamma_j\lambda_j - X_i'(\gamma_j\delta_j + \eta_j) - Z_i(\beta_j + \alpha_j\gamma_j) - \rho_i - \gamma_j\vartheta_i)}{\sqrt{1 - \frac{\gamma_j^2}{\sigma_\varepsilon^2 + \gamma_j^2}}}\right)$$

The assumptions on the unobserved heterogeneity is that these terms are bivariate normally distributed: $\binom{\vartheta_i}{\rho_i} = N(\binom{0}{0}, \begin{pmatrix} \sigma_\vartheta^2 & \tau\sigma_\rho\sigma_\vartheta \\ \tau\sigma_\rho\sigma_\vartheta & \sigma_\rho^2 \end{pmatrix})$.

The individual contribution to the likelihood function is:

(B.4)

$$L_i = \int_{-\infty}^{\infty}\int_{-\infty}^{\infty}\prod_{j=1}^{5} P(Y_{ij} = k|W_{ij}, X_i, Z_i, \vartheta_i, \varepsilon_{ij} + \gamma_j u_{ij})\; g(R_{ij} = r_{ij}|W_{ij}, X_i, Z_i, \rho_i, \vartheta_i) f(\rho_i, \vartheta_i) d\rho_i d\vartheta_i$$

where the function $f(\rho_i, \vartheta_i)$ is the density function of the bivariate normal distribution:

(B.5)
$$f(\rho_i, \vartheta_i) = \frac{1}{2\pi\sigma_\rho\sigma_\vartheta\sqrt{1-\tau^2}} \exp\left(-\frac{1}{2}\binom{\rho_i}{\vartheta_i}^{\mathrm{T}} \begin{pmatrix} \sigma_\rho^2 & \tau\sigma_\rho\sigma_\vartheta \\ \tau\sigma_\rho\sigma_\vartheta & \sigma_\vartheta^2 \end{pmatrix}^{-1} \binom{\rho_i}{\vartheta_i}\right)$$

Appendix C. Derivation likelihood function for demanding occupations and the willingness to contribute to (early) retirement scheme

This appendix derives the likelihood function of the model in section 4.2. Equation (C.1) shows the probability for a given respondent *i* answering the questions about demanding occupations and the willingness to contribute of occupation *j*:

(C.1)
$$\begin{aligned} P(Y_{ij} = k, C_{ij} = l) &= P(c_{k-1} < y_{ij}^* \le c_k, d_{l-1} < C_{ij}^* \le d_l) \\ &= P(y_{ij}^* \le c_k, C_{ij}^* \le d_l) - P(y_{ij}^* \le c_k, C_{ij}^* \le d_{l-1}) \\ &\quad - P(y_{ij}^* \le c_{k-1}, C_{ij}^* \le d_l) + P(y_{ij}^* \le c_{k-1}, C_{ij}^* \le d_{l-1}) \end{aligned}$$

The probabilities are from a bivariate normal distribution:

$$\begin{aligned} P(y_{ij}^* \le c_{k+x}, C_{ij}^* \le d_{l+x}) &= \Phi_2(c_{k+x} - X_i'\delta_j - Z_i\alpha_j - W_{ij}'\lambda_j \\ &\quad - \vartheta_i, \frac{d_{l+x} - W_{ij}'\kappa_j\lambda_j - X_i'(\kappa_j\delta_j + \mu_j) - Z_i(\eta_j + \kappa_j\alpha_j) - \phi_i - \kappa_j\vartheta_i}{\sqrt{1 + \kappa_j^2}}, \frac{\kappa_j}{\sqrt{1 + \kappa_j^2}}) \end{aligned}$$

where x$\in \{0, -1\}$

The individual contribution to the likelihood is:

(C.2)
$$L_i = \int_{-\infty}^{\infty}\int_{-\infty}^{\infty}\prod_{j=1}^{5} P(Y_{ij} = k, C_{ij} = l|\phi_i, \vartheta_i, X_i, Z_i, W_{ij})\, f(\phi_i, \vartheta_i) d\phi_i d\vartheta_i$$

If the particular values of *k* and *l* are observed and zero otherwise. The function $f(\rho_i, \vartheta_i)$ is the density function of the bivariate normal distribution:

(C.3) $$f(\phi_i, \vartheta_i) = \frac{1}{2\pi\sigma_\phi\sigma_\vartheta\sqrt{1-\tau^2}} \exp\left(-\frac{1}{2}\begin{pmatrix}\phi_i \\ \vartheta_i\end{pmatrix}^{\mathrm{T}}\begin{pmatrix}\sigma_\phi^2 & \tau\sigma_\phi\sigma_\vartheta \\ \tau\sigma_\phi\sigma_\vartheta & \sigma_\vartheta^2\end{pmatrix}^{-1}\begin{pmatrix}\phi_i \\ \vartheta_i\end{pmatrix}\right)$$

Appendix D: Descriptive statistics of the background variables

Table D.1 Descriptive statistics for the background variables in the estimated models

	Mean or Percentage
Gender	
Male	49.13
Female	50.87
Age (years)	48.30
Education	
Primary education	7.60
Lower secondary education (VMBO)	24.79
Upper secondary education (HAVO/VWO) and lower vocational(MBO)	38.50
Upper vocational (HBO) and University (WO)	29.11
Income (Nett monthly income household)	
1150 Euros or less	5.10
1151 - 1800 Euros	13.05
1801 - 2600 Euros	25.54
2601 Euros or more	56.30
Employment status	
Employed at the moment	65.60
Not working at the moment, but worked in the past	12.27
(Early) retired	22.12
Region of the Netherlands	
North	13.53
West	43.99
East	21.18
South	21.30

Weighted data. $N = 1{,}771$ (estimation sample). Region of the Netherlands: West = Noord- and Zuid-Holland, Utrecht and Zeeland; North = Groningen, Friesland and Drenthe; East = Overijssel, Flevoland and Gelderland; South = Noord-Brabant and Limburg.

Appendix E. All estimation results for the model linking the extent of how demanding occupations are to the reasonable retirement age

This appendix shows all estimation results for the model of section 4.1.

Table E.1 Estimation of model

	Desk job	Teacher	Nurse	Construction worker	Fire man
How demanding are said occupations?					
Shifts: Quite	0.167**	0.119	0.192**	0.025	0.235***
	(0.079)	(0.077)	(0.078)	(0.087)	(0.078)
Shifts: Certainly yes	0.051	0.164*	0.373***	0.042	0.326***
	(0.100)	(0.096)	(0.099)	(0.113)	(0.099)
Physical: Quite	-0.662***	-0.194	0.196	0.986***	0.602***
	(0.133)	(0.130)	(0.131)	(0.134)	(0.131)
Physical: Certainly yes	-0.927***	-0.189	0.504***	2.195***	1.067***
	(0.136)	(0.132)	(0.134)	(0.143)	(0.134)
Time Pressure: Quite	0.383***	0.268***	-0.001	-0.217***	-0.185**
	(0.075)	(0.072)	(0.074)	(0.084)	(0.074)
Time Pressure: Certainly yes	0.475***	0.486***	0.275**	-0.335**	-0.300**
	(0.117)	(0.113)	(0.118)	(0.135)	(0.117)
Responsibility: Quite	0.285***	0.277***	0.247***	0.027	0.106
	(0.074)	(0.071)	(0.073)	(0.083)	(0.073)
Responsibility: Certainly yes	0.571***	0.444***	0.415***	0.078	0.276**
	(0.127)	(0.124)	(0.130)	(0.148)	(0.129)
Irregular working hours: Quite	-0.007	0.160**	0.219***	0.084	0.158**
	(0.079)	(0.077)	(0.079)	(0.088)	(0.079)
Irregular working hours: Certainly yes	0.016	0.121	0.496***	0.074	0.415***
	(0.121)	(0.118)	(0.122)	(0.140)	(0.122)
Long working hours: Quite	0.113	0.086	0.097	0.037	0.122
	(0.077)	(0.074)	(0.076)	(0.084)	(0.076)
Long working hours: Certainly yes	-0.152	0.047	-0.070	0.308**	0.305***
	(0.111)	(0.107)	(0.110)	(0.129)	(0.111)
Many worked years: Quite	0.025	0.150**	0.248***	0.200**	0.139**
	(0.070)	(0.068)	(0.070)	(0.078)	(0.070)
Many worked years: Certainly yes	0.003	0.216**	0.545***	0.451***	0.109
	(0.095)	(0.091)	(0.096)	(0.115)	(0.095)
Female name of vignette person	0.127**	0.126**	0.214***	-	-
	(0.057)	(0.056)	(0.058)		
gender respondent	0.129*	0.098	0.131*	0.147*	0.303***
	(0.067)	(0.065)	(0.067)	(0.078)	(0.067)
Age	0.023*	0.024*	0.015	0.009	-0.031**
	(0.013)	(0.013)	(0.013)	(0.016)	(0.013)
age squared	-0.000	-0.000	-0.000	-0.000	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Family income less than 1150	-0.013	0.020	-0.040	0.109	0.117

Euro					
	(0.130)	(0.125)	(0.129)	(0.154)	(0.130)
Family income between 1151 and 1800 Euro	-0.057	0.110	0.084	0.145	0.181*
	(0.092)	(0.089)	(0.093)	(0.109)	(0.093)
Family income between 1801 and 2600 Euro	-0.078	0.134*	0.050	0.134	0.160**
	(0.073)	(0.070)	(0.073)	(0.086)	(0.073)
basisonderwijs	-0.304**	-0.192	0.072	0.168	-0.040
	(0.154)	(0.149)	(0.154)	(0.180)	(0.153)
vmbo	-0.104	-0.111	0.196**	0.267***	0.070
	(0.081)	(0.078)	(0.082)	(0.096)	(0.082)
mbo+havo/vwo	-0.085	-0.079	0.182**	0.167*	0.162**
	(0.075)	(0.073)	(0.076)	(0.087)	(0.076)
Region North	-0.065	-0.284***	-0.256***	-0.091	0.040
	(0.095)	(0.092)	(0.095)	(0.109)	(0.096)
Region East	0.123	-0.148*	-0.075	0.019	-0.026
	(0.079)	(0.077)	(0.080)	(0.093)	(0.080)
Region South	0.041	-0.185**	-0.164**	-0.002	-0.057
	(0.077)	(0.074)	(0.077)	(0.089)	(0.077)
Not in a job now, but worked before	-0.098	0.021	-0.024	0.136	0.084
	(0.098)	(0.095)	(0.099)	(0.118)	(0.099)
(Early) retirement	-0.160	0.023	0.026	0.131	0.144
	(0.105)	(0.102)	(0.106)	(0.124)	(0.105)
Teacher (self-identification)	-0.215**	0.426***	0.193**	0.111	0.005
	(0.089)	(0.087)	(0.090)	(0.104)	(0.090)
Nurse (self-identification)	-0.417***	-0.188**	0.010	-0.064	-0.064
	(0.082)	(0.079)	(0.082)	(0.095)	(0.082)
Construction Worker (self-identification)	-0.267**	-0.283***	-0.345***	0.010	-0.191*
	(0.110)	(0.105)	(0.108)	(0.128)	(0.108)
Fireman (self-identification)	-0.244*	-0.140	-0.226	0.048	0.310**
	(0.143)	(0.138)	(0.142)	(0.166)	(0.145)
Constant	-	0.516	1.513***	2.098***	2.623***
		(0.451)	(0.463)	(0.504)	(0.463)
What is a reasonable retirement age					
γ_j	-0.552***	-0.815***	-0.836***	-0.738***	-0.960***
	(0.036)	(0.031)	(0.032)	(0.032)	(0.030)
Female name of vignette person	-0.258***	-0.248***	-0.241***	-	-
	(0.080)	(0.081)	(0.082)		
gender respondent	-0.201*	-0.376***	-0.244**	-0.339***	0.021
	(0.109)	(0.110)	(0.111)	(0.114)	(0.112)
Age	-0.012	-0.016	-0.002	0.045**	-0.012
	(0.021)	(0.022)	(0.022)	(0.022)	(0.022)
age squared	0.000	0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Family income less than 1150 Euro	-0.024	0.102	-0.235	-0.057	0.354
	(0.214)	(0.216)	(0.217)	(0.225)	(0.219)
Family income between 1151 and 1800 Euro	0.246	0.066	0.012	-0.134	0.139
	(0.153)	(0.155)	(0.156)	(0.161)	(0.157)
Family income between 1801 and	-0.033	0.023	-0.041	-0.134	0.047

2600 Euro					
	(0.120)	(0.121)	(0.123)	(0.126)	(0.123)
basisonderwijs	-0.377	-0.780***	-0.269	0.057	-0.443*
	(0.242)	(0.244)	(0.247)	(0.254)	(0.247)
vmbo	-0.556***	-0.784***	-0.496***	-0.093	-0.216
	(0.134)	(0.135)	(0.137)	(0.141)	(0.137)
mbo+havo/vwo	-0.306**	-0.519***	-0.151	-0.103	-0.325**
	(0.126)	(0.127)	(0.129)	(0.132)	(0.129)
Region North	-0.206	-0.075	-0.082	0.063	0.025
	(0.160)	(0.162)	(0.163)	(0.167)	(0.164)
Region East	0.050	0.097	0.153	0.038	0.296**
	(0.132)	(0.133)	(0.134)	(0.138)	(0.135)
Region South	-0.283**	-0.141	-0.183	-0.209	-0.060
	(0.126)	(0.127)	(0.129)	(0.132)	(0.129)
Not in a job now, but worked before	-0.075	-0.271*	-0.372**	-0.288*	-0.250
	(0.161)	(0.163)	(0.164)	(0.170)	(0.165)
(Early) retirement	-0.047	-0.356**	-0.085	-0.352*	-0.156
	(0.173)	(0.175)	(0.176)	(0.181)	(0.177)
Teacher (self-identification)	-0.091	-0.061	0.052	0.031	0.021
	(0.145)	(0.147)	(0.148)	(0.152)	(0.148)
Nurse (self-identification)	-0.129	-0.175	-0.211	-0.142	-0.100
	(0.132)	(0.133)	(0.134)	(0.138)	(0.135)
Construction Worker (self-identification)	-0.056	0.029	-0.110	0.228	-0.099
	(0.185)	(0.186)	(0.187)	(0.193)	(0.188)
Fireman (self-identification)	0.052	-0.283	-0.253	0.010	0.032
	(0.242)	(0.243)	(0.245)	(0.252)	(0.248)
Constant	66.697***	66.790***	66.328***	63.840***	66.024***
	(0.580)	(0.641)	(0.654)	(0.656)	(0.683)
c_1			-0.141		
			(0.369)		
c_2			0.921**		
			(0.369)		
c_3			2.408***		
			(0.370)		
c_4			4.019***		
			(0.371)		
σ_ε			1.365***		
			(0.010)		
σ_ϑ			0.610***		
			(0.021)		
σ_ρ			1.587***		
			(0.030)		
τ $(correlation\ coefficient)$			0.051		
			(0.033)		
Number of observations			1771		
Log likelihood			-26494		

Standard errors in parentheses, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. Reference person has tertiary education degree ('HBO or WO'), a household income higher than 2600 Euros, is a male, lives in the West of the Netherlands, has a desk job. Furthermore, he answers the questions with a male name. Region of the Netherlands: West = Noord- and Zuid-Holland, Utrecht and Zeeland; North = Groningen, Friesland and Drenthe; East = Overijssel, Flevoland and Gelderland; South = Noord-Brabant and Limburg.

Appendix F. Estimation results for the model linking the extent of how demanding occupations are to the willingness to contribute to early retirement schemes for certain professions

This appendix shows the complete table with the estimation results for the model of section 4.2.

Table F.1 Estimation of model

	Desk job	Teacher	Nurse	Construction worker	Fire man
How demanding are said occupations?					
Shifts: Quite	0.172**	0.139*	0.186**	0.000	0.283***
	(0.075)	(0.075)	(0.078)	(0.091)	(0.079)
Shifts: Certainly yes	0.025	0.163*	0.388***	0.073	0.352***
	(0.094)	(0.094)	(0.100)	(0.120)	(0.101)
Physical: Quite	-0.629***	-0.256**	0.153	0.957***	0.527***
	(0.129)	(0.128)	(0.132)	(0.136)	(0.133)
Physical: Certainly yes	-0.945***	-0.334**	0.394***	2.192***	0.971***
	(0.132)	(0.131)	(0.136)	(0.145)	(0.137)
Time Pressure: Quite	0.320***	0.244***	-0.026	-0.269***	-0.215***
	(0.071)	(0.070)	(0.074)	(0.088)	(0.075)
Time Pressure: Certainly yes	0.427***	0.454***	0.256**	-0.503***	-0.401***
	(0.110)	(0.110)	(0.119)	(0.143)	(0.119)
Responsibility: Quite	0.289***	0.279***	0.256***	-0.012	0.142*
	(0.070)	(0.069)	(0.073)	(0.087)	(0.074)
Responsibility: Certainly yes	0.511***	0.440***	0.493***	0.193	0.346***
	(0.121)	(0.121)	(0.131)	(0.158)	(0.132)
Irregular working hours: Quite	0.035	0.182**	0.245***	0.105	0.153*
	(0.075)	(0.075)	(0.078)	(0.091)	(0.079)
Irregular working hours: Certainly yes	-0.067	0.046	0.390***	-0.058	0.361***
	(0.115)	(0.115)	(0.123)	(0.148)	(0.124)
Long working hours: Quite	0.127*	0.109	0.108	0.080	0.160**
	(0.073)	(0.072)	(0.076)	(0.087)	(0.076)
Long working hours: Certainly yes	-0.053	0.099	0.016	0.483***	0.408***
	(0.105)	(0.103)	(0.110)	(0.138)	(0.112)
Many worked years: Quite	-0.050	0.064	0.162**	0.141*	0.056
	(0.066)	(0.066)	(0.070)	(0.082)	(0.071)
Many worked years: Certainly yes	-0.092	0.106	0.443***	0.513***	0.058
	(0.089)	(0.089)	(0.096)	(0.125)	(0.097)
Female name of vignette person	0.153***	0.143**	0.230***	-	-
	(0.058)	(0.057)	(0.059)		
gender respondent	0.128*	0.103	0.129*	0.128	0.302***
	(0.067)	(0.066)	(0.069)	(0.080)	(0.069)

age	0.022	0.023*	0.015	0.003	-0.037***
	(0.014)	(0.013)	(0.014)	(0.016)	(0.014)
age squared	-0.000	-0.000	-0.000	0.000	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Family income less than 1150 Euro	-0.039	-0.003	-0.046	0.123	0.114
	(0.130)	(0.128)	(0.131)	(0.158)	(0.134)
Family income between 1151 and 1800 Euro	-0.079	0.099	0.077	0.150	0.160*
	(0.093)	(0.091)	(0.095)	(0.111)	(0.095)
Family income between 1801 and 2600 Euro	-0.075	0.140*	0.068	0.176**	0.153**
	(0.073)	(0.072)	(0.075)	(0.089)	(0.075)
basisonderwijs	-0.241	-0.152	0.114	0.114	0.014
	(0.157)	(0.153)	(0.158)	(0.184)	(0.159)
vmbo	-0.067	-0.091	0.217***	0.298***	0.101
	(0.082)	(0.080)	(0.084)	(0.099)	(0.084)
mbo+havo/vwo	-0.071	-0.085	0.169**	0.131	0.156**
	(0.076)	(0.075)	(0.078)	(0.089)	(0.078)
Region North	-0.083	-0.308***	-0.276***	-0.130	0.033
	(0.096)	(0.094)	(0.098)	(0.113)	(0.099)
Region East	0.090	-0.170**	-0.093	-0.003	-0.047
	(0.080)	(0.079)	(0.082)	(0.096)	(0.082)
Region South	0.022	-0.204***	-0.179**	-0.025	-0.076
	(0.077)	(0.076)	(0.079)	(0.092)	(0.079)
Not in a job now, but worked before	-0.104	0.030	-0.032	0.205*	0.088
	(0.099)	(0.098)	(0.102)	(0.122)	(0.102)
(Early) retirement	-0.144	0.028	0.017	0.141	0.133
	(0.106)	(0.105)	(0.109)	(0.128)	(0.108)
Teacher (self-identification)	-0.189**	0.454***	0.218**	0.121	0.028
	(0.089)	(0.088)	(0.092)	(0.106)	(0.092)
Nurse (self-identification)	-0.373***	-0.152*	0.053	-0.025	-0.041
	(0.082)	(0.080)	(0.084)	(0.098)	(0.084)
Construction Worker (self-identification)	-0.257**	-0.248**	-0.327***	0.048	-0.164
	(0.110)	(0.107)	(0.110)	(0.132)	(0.111)
Fireman (self-identification)	-0.163	-0.056	-0.163	0.089	0.390***
	(0.143)	(0.139)	(0.143)	(0.169)	(0.149)
Constant (self-identification)	-	0.579	1.496***	2.276***	2.768***
		(0.461)	(0.470)	(0.516)	(0.476)
Willingness to contribute					
κ_j	1.492***	1.294***	0.766***	0.564***	0.654***
	(0.073)	(0.060)	(0.042)	(0.037)	(0.035)
Female name of vignette person	-0.123	-0.014	0.126	-	-
	(0.093)	(0.086)	(0.078)		
gender respondent	-0.194	-0.152	0.098	0.108	0.022
	(0.141)	(0.137)	(0.138)	(0.142)	(0.139)
age	-0.071**	-0.061**	-0.016	-0.016	-0.026
	(0.030)	(0.029)	(0.030)	(0.030)	(0.030)
age squared	0.001**	0.001**	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Family income less than 1150 Euro	0.347	0.452*	0.244	0.250	0.179
	(0.263)	(0.253)	(0.251)	(0.258)	(0.253)
Family income between 1151 and 1800 Euro	0.246	0.156	0.118	0.000	0.205
	(0.198)	(0.192)	(0.192)	(0.197)	(0.193)
Family income between 1801 and 2600 Euro	0.195	-0.050	0.141	0.227	0.234
	(0.155)	(0.152)	(0.151)	(0.155)	(0.152)
basisonderwijs	0.537*	0.117	-0.178	-0.257	-0.293
	(0.320)	(0.310)	(0.312)	(0.322)	(0.317)
vmbo	0.314*	-0.157	-0.286	-0.378**	-0.176
	(0.178)	(0.174)	(0.176)	(0.181)	(0.176)
mbo+havo/vwo	0.130	-0.031	-0.210	-0.170	-0.108
	(0.163)	(0.158)	(0.159)	(0.163)	(0.160)
Region North	0.484**	0.298	0.337*	0.346*	0.151
	(0.205)	(0.200)	(0.203)	(0.208)	(0.204)
Region East	0.141	0.207	0.143	0.147	-0.017
	(0.178)	(0.174)	(0.174)	(0.179)	(0.175)
Region South	0.048	-0.065	-0.113	-0.058	-0.206
	(0.163)	(0.158)	(0.157)	(0.160)	(0.158)
Not in a job now, but worked before	0.614***	0.300	0.326	0.147	0.256
	(0.209)	(0.203)	(0.203)	(0.209)	(0.204)
(Early) retirement	-0.076	-0.117	0.063	0.233	0.286
	(0.219)	(0.215)	(0.217)	(0.223)	(0.218)
Teacher (self-identification)	0.149	-0.061	-0.021	-0.059	-0.032
	(0.189)	(0.185)	(0.184)	(0.189)	(0.185)
Nurse (self-identification)	0.716***	0.333**	0.375**	0.421**	0.370**
	(0.175)	(0.168)	(0.168)	(0.173)	(0.170)
Construction Worker (self-identification)	0.381	0.364	0.545**	0.656***	0.590**
	(0.239)	(0.232)	(0.231)	(0.237)	(0.232)
Fireman (self-identification)	0.552*	0.235	0.463	0.198	0.468
	(0.302)	(0.293)	(0.290)	(0.297)	(0.293)
Constant	-	-0.749	-0.966	-0.304	-0.003
		(0.578)	(0.606)	(0.653)	(0.630)
c_1			-0.137		
			(0.372)		
c_2			0.861**		
			(0.373)		
c_3			2.316***		
			(0.374)		
c_4			3.945***		
			(0.375)		
d_1			-1.441		
			(0.926)		
d_2			0.752		
			(0.924)		
d_3			2.635***		
			(0.923)		
d_4			5.378***		
			(0.925)		
σ_ϑ			0.606***		
			(0.018)		

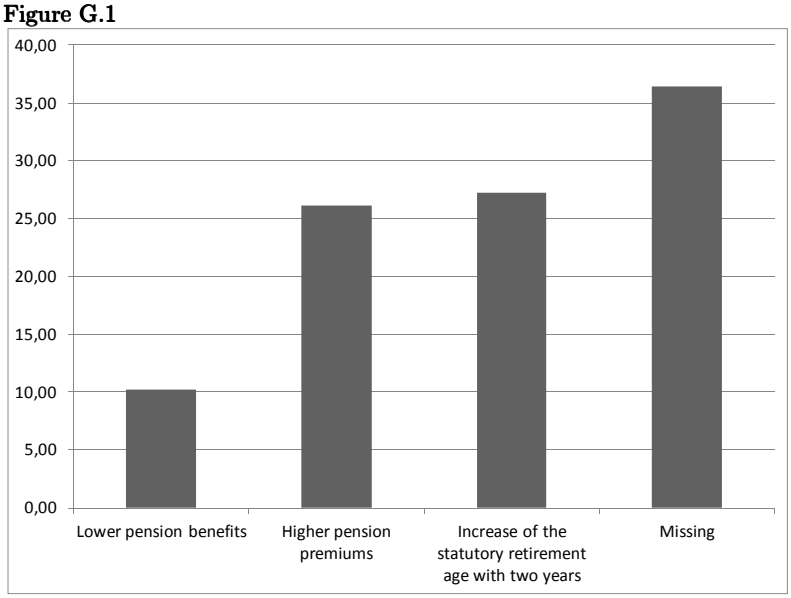
σ_ϕ	2.731***
	(0.077)
$\tau\ (correlation\ coefficient)$	0.516***
	(0.021)
number of observations	1771
Log likelihood	-18096

Standard errors in parentheses; *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. Reference person has tertiary education degree ('HBO or WO'), a household income higher than 2600 Euros, is a male, lives in the West of the Netherlands, has a desk job. Furthermore, he answers the questions with a male name. Region of the Netherlands: West = Noord- and Zuid-Holland, Utrecht and Zeeland; North = Groningen, Friesland and Drenthe; East = Overijssel, Flevoland and Gelderland; South = Noord-Brabant and Limburg.

Appendix G: Estimation with stance towards statutory retirement age increase

This appendix shows the distribution of the stance towards the statutory retirement age over the respondents. It also shows re-estimation of the model with this answers to this question included as additional variables. For the stance on the statutory retirement age increase the distribution of the answers for the following question is examined:
To make sure that the general old-age pension remains affordable certain measures have to be taken.
Which of the following measures appeals to you most?
1 A lower general old-age pension.
2 An increase of the old-age pension premium for people working.
3 Increase the age by two years on which I will receive the general old-age pension.
Figure G.1 shows the distribution of the answers over the respondents.

Figure G.1



Legend: answer to the question: " *To make sure that the general old-age pension remains affordable certain measures have to be taken. Which of the following measures appeals to you most?*" N=1,771. Source: DHS, own computations

Note that the question was asked only to respondents younger than 65 years of age. This implies that a large part (68%) of the 'missing' category consists of respondents at least this age.

Table G.1 Estimation of model for reasonable retirement age with inclusion of opinion about AOW reform

	Desk job	Teacher	Nurse	Construction worker	Fire man
How demanding are said occupations?					
Shifts: Quite	0.163**	0.115	0.187**	0.187**	0.231***
	(0.079)	(0.077)	(0.078)	(0.078)	(0.078)
Shifts: Certainly yes	0.050	0.162*	0.370***	0.370***	0.324***
	(0.100)	(0.096)	(0.099)	(0.099)	(0.099)
Physical: Quite	-0.653***	-0.186	0.202	0.202	0.607***
	(0.133)	(0.130)	(0.132)	(0.132)	(0.131)
Physical: Certainly yes	-0.923***	-0.185	0.507***	0.507***	1.069***
	(0.136)	(0.132)	(0.134)	(0.134)	(0.134)
Time Pressure: Quite	0.379***	0.265***	-0.003	-0.003	-0.187**
	(0.075)	(0.072)	(0.074)	(0.074)	(0.074)
Time Pressure: Certainly yes	0.469***	0.480***	0.270**	0.270**	-0.305***
	(0.117)	(0.113)	(0.119)	(0.119)	(0.117)
Responsibility: Quite	0.285***	0.276***	0.246***	0.246***	0.105
	(0.074)	(0.071)	(0.073)	(0.073)	(0.073)
Responsibility: Certainly yes	0.576***	0.448***	0.418***	0.418***	0.279**
	(0.127)	(0.124)	(0.130)	(0.130)	(0.129)
Irregular working hours: Quite	-0.008	0.161**	0.219***	0.219***	0.158**
	(0.079)	(0.077)	(0.078)	(0.078)	(0.079)
Irregular working hours: Certainly yes	0.014	0.118	0.494***	0.494***	0.413***
	(0.121)	(0.118)	(0.122)	(0.122)	(0.122)
Long working hours: Quite	0.111	0.083	0.095	0.095	0.120
	(0.077)	(0.074)	(0.076)	(0.076)	(0.076)
Long working hours: Certainly yes	-0.148	0.052	-0.065	-0.065	0.310***
	(0.111)	(0.107)	(0.110)	(0.110)	(0.111)
Many worked years: Quite	0.027	0.152**	0.250***	0.250***	0.143**
	(0.070)	(0.068)	(0.069)	(0.069)	(0.070)
Many worked years: Certainly yes	0.006	0.220**	0.550***	0.550***	0.113
	(0.095)	(0.091)	(0.096)	(0.096)	(0.095)
Female name of vignette person	0.128**	0.127**	0.215***	-	-
	(0.057)	(0.056)	(0.058)		
gender respondent	0.125*	0.094	0.127*	0.127*	0.299***
	(0.067)	(0.065)	(0.067)	(0.067)	(0.067)
Age	0.023*	0.024*	0.015	0.015	-0.031**
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
age squared	-0.000	-0.000	-0.000	-0.000	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Family income between 1151 and 1800 Euro	-0.004	0.031	-0.029	-0.029	0.128
	(0.130)	(0.126)	(0.129)	(0.129)	(0.131)
Family income between 1801 and 2600 Euro	-0.052	0.116	0.089	0.089	0.187**
	(0.092)	(0.089)	(0.093)	(0.093)	(0.093)
Family income more than 2600	-0.075	0.138*	0.054	0.054	0.164**

Euro					
	(0.073)	(0.070)	(0.073)	(0.073)	(0.073)
Vmbo	-0.298*	-0.186	0.077	0.077	-0.033
	(0.154)	(0.148)	(0.153)	(0.153)	(0.153)
mbo+havo/vwo	-0.104	-0.110	0.196**	0.196**	0.070
	(0.081)	(0.078)	(0.082)	(0.082)	(0.082)
hbo+wo	-0.083	-0.077	0.184**	0.184**	0.164**
	(0.075)	(0.073)	(0.076)	(0.076)	(0.076)
Region North	-0.063	-0.282***	-0.253***	-0.253***	0.042
	(0.095)	(0.092)	(0.095)	(0.095)	(0.096)
Region East	0.126	-0.144*	-0.071	-0.071	-0.023
	(0.079)	(0.077)	(0.080)	(0.080)	(0.080)
Region South	0.043	-0.183**	-0.162**	-0.162**	-0.055
	(0.077)	(0.074)	(0.077)	(0.077)	(0.077)
Not in a job now, but worked before	-0.101	0.017	-0.028	-0.028	0.080
	(0.098)	(0.096)	(0.099)	(0.099)	(0.099)
(Early) retirement	-0.156	0.027	0.029	0.029	0.147
	(0.105)	(0.102)	(0.105)	(0.105)	(0.105)
Teacher (self-identification)	-0.210**	0.431***	0.198**	0.198**	0.010
	(0.089)	(0.087)	(0.090)	(0.090)	(0.090)
Nurse (self-identification)	-0.411***	-0.183**	0.015	0.015	-0.059
	(0.082)	(0.079)	(0.082)	(0.082)	(0.082)
Construction Worker (self-identification)	-0.269**	-0.285***	-0.347***	-0.347***	-0.194*
	(0.110)	(0.105)	(0.108)	(0.108)	(0.108)
Fireman (self-identification)	-0.238*	-0.134	-0.219	-0.219	0.317**
	(0.143)	(0.138)	(0.142)	(0.142)	(0.145)
Constant	-	0.515	1.512***	1.512***	2.622***
		(0.451)	(0.463)	(0.463)	(0.463)
What is a reasonable retirement age					
γ_j	-0.545***	-0.813***	-0.832***	-0.738***	-0.961***
	(0.037)	(0.031)	(0.032)	(0.032)	(0.030)
Female name of vignette person	-0.247***	-0.241***	-0.240***	-	-
	(0.080)	(0.081)	(0.083)		
gender respondent	-0.203*	-0.377***	-0.245**	-0.339***	0.021
	(0.109)	(0.110)	(0.111)	(0.114)	(0.112)
Age	-0.009	-0.017	-0.008	0.039*	-0.015
	(0.022)	(0.023)	(0.023)	(0.023)	(0.023)
age squared	0.000	0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Family income between 1151 and 1800 Euro	-0.055	0.077	-0.253	-0.074	0.335
	(0.215)	(0.217)	(0.218)	(0.226)	(0.220)
Family income between 1801 and 2600 Euro	0.216	0.037	-0.012	-0.156	0.118
	(0.152)	(0.153)	(0.155)	(0.160)	(0.156)
Family income more than 2600 Euro	-0.049	0.006	-0.058	-0.150	0.034
	(0.119)	(0.120)	(0.121)	(0.125)	(0.122)
Vmbo	-0.344	-0.751***	-0.244	0.077	-0.430*
	(0.238)	(0.241)	(0.243)	(0.251)	(0.244)
mbo+havo/vwo	-0.479***	-0.714***	-0.436***	-0.038	-0.168
	(0.134)	(0.136)	(0.137)	(0.141)	(0.137)

hbo+wo	-0.241*	-0.458***	-0.097	-0.053	-0.286**
	(0.126)	(0.128)	(0.129)	(0.132)	(0.129)
Region North	-0.184	-0.053	-0.059	0.086	0.044
	(0.158)	(0.160)	(0.161)	(0.165)	(0.162)
Region East	0.058	0.109	0.166	0.049	0.305**
	(0.132)	(0.133)	(0.134)	(0.138)	(0.135)
Region South	-0.255**	-0.113	-0.154	-0.182	-0.037
	(0.125)	(0.126)	(0.128)	(0.131)	(0.128)
Not in a job now, but worked before	-0.111	-0.296*	-0.385**	-0.299*	-0.266
	(0.160)	(0.162)	(0.163)	(0.169)	(0.164)
(Early) retirement	-0.071	-0.362**	-0.066	-0.330*	-0.146
	(0.174)	(0.176)	(0.178)	(0.183)	(0.178)
Teacher (self-identification)	-0.028	-0.007	0.101	0.080	0.065
	(0.145)	(0.147)	(0.148)	(0.152)	(0.149)
Nurse (self-identification)	-0.064	-0.117	-0.158	-0.088	-0.052
	(0.132)	(0.133)	(0.134)	(0.138)	(0.135)
Construction Worker (self-identification)	-0.048	0.032	-0.109	0.228	-0.099
	(0.183)	(0.184)	(0.185)	(0.192)	(0.186)
Fireman (self-identification)	0.134	-0.216	-0.197	0.065	0.086
	(0.239)	(0.241)	(0.243)	(0.250)	(0.246)
Pension premium increase	0.350*	0.267	0.240	0.294	0.317
	(0.205)	(0.207)	(0.208)	(0.210)	(0.209)
Increase of two years in the statutory retirement age	1.073***	0.926***	0.836***	0.855***	0.795***
	(0.203)	(0.205)	(0.206)	(0.207)	(0.207)
Missing	0.752***	0.568***	0.418*	0.446**	0.489**
	(0.213)	(0.214)	(0.216)	(0.217)	(0.217)
Constant	65.971***	66.262***	65.976***	63.481***	65.612***
	(0.615)	(0.674)	(0.685)	(0.688)	(0.714)
c_1			-0.130		
			(0.369)		
c_2			0.932**		
			(0.369)		
c_3			2.418***		
			(0.370)		
c_4			4.029***		
			(0.371)		
σ_ε			1.365***		
			(0.010)		
σ_ϑ			0.605***		
			(0.021)		
σ_ρ			1.551***		
			(0.029)		
τ $(correlation\ coefficient)$			0.052		
			(0.035)		
Number of observations			1771		
Log likelihood			-26467		

Standard errors in parentheses, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. Reference person has tertiary education degree ('HBO or WO'), a household income higher than 2600 Euros, is a male, lives in the West of the Netherlands, has a desk job. Furthermore, he answers the questions with a male name. Region of the Netherlands: West = Noord- and Zuid-Holland, Utrecht and Zeeland; North = Groningen, Friesland and Drenthe; East = Overijssel, Flevoland and Gelderland; South = Noord-Brabant and Limburg.

Table G.2 Estimation of model for willingness to contribute with inclusion of opinion about AOW reform

	Desk job	Teacher	Nurse	Construction worker	Fire man
How demanding are said occupations?					
Shifts: Quite	0.171**	0.139*	0.185**	0.000	0.283***
	(0.075)	(0.075)	(0.078)	(0.091)	(0.079)
Shifts: Certainly yes	0.025	0.165*	0.388***	0.076	0.353***
	(0.095)	(0.094)	(0.100)	(0.120)	(0.101)
Physical: Quite	-0.620***	-0.246*	0.161	0.964***	0.534***
	(0.129)	(0.128)	(0.133)	(0.136)	(0.133)
Physical: Certainly yes	-0.940***	-0.325**	0.401***	2.196***	0.977***
	(0.132)	(0.131)	(0.136)	(0.145)	(0.137)
Time Pressure: Quite	0.317***	0.241***	-0.029	-0.271***	-0.217***
	(0.071)	(0.070)	(0.074)	(0.088)	(0.075)
Time Pressure: Certainly yes	0.423***	0.452***	0.254**	-0.502***	-0.403***
	(0.111)	(0.110)	(0.119)	(0.143)	(0.120)
Responsibility: Quite	0.291***	0.280***	0.256***	-0.013	0.141*
	(0.070)	(0.069)	(0.073)	(0.087)	(0.074)
Responsibility: Certainly yes	0.513***	0.440***	0.494***	0.196	0.347***
	(0.121)	(0.121)	(0.131)	(0.158)	(0.132)
Irregular working hours: Quite	0.032	0.180**	0.243***	0.102	0.150*
	(0.075)	(0.075)	(0.079)	(0.091)	(0.079)
Irregular working hours: Certainly yes	-0.067	0.046	0.390***	-0.057	0.362***
	(0.115)	(0.115)	(0.123)	(0.148)	(0.124)
Long working hours: Quite	0.124*	0.105	0.106	0.078	0.158**
	(0.073)	(0.072)	(0.076)	(0.087)	(0.076)
Long working hours: Certainly yes	-0.057	0.093	0.012	0.478***	0.405***
	(0.105)	(0.104)	(0.111)	(0.138)	(0.112)
Many worked years: Quite	-0.054	0.061	0.159**	0.139*	0.054
	(0.066)	(0.066)	(0.070)	(0.082)	(0.071)
Many worked years: Certainly yes	-0.096	0.101	0.440***	0.511***	0.056
	(0.090)	(0.089)	(0.096)	(0.125)	(0.097)
Female name of vignette person	0.153***	0.143**	0.229***	-	-
	(0.058)	(0.057)	(0.059)		
gender respondent	0.129*	0.104	0.130*	0.128	0.303***
	(0.067)	(0.066)	(0.069)	(0.080)	(0.069)
age	0.022	0.023*	0.015	0.003	-0.037***
	(0.014)	(0.013)	(0.014)	(0.016)	(0.014)
age squared	-0.000	-0.000	-0.000	0.000	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Family income less than 1150 Euro	-0.040	-0.004	-0.048	0.121	0.112
	(0.130)	(0.128)	(0.132)	(0.158)	(0.134)
Family income between 1151 and 1800 Euro	-0.079	0.098	0.076	0.150	0.160*
	(0.093)	(0.091)	(0.095)	(0.111)	(0.095)
Family income between 1801 and 2600 Euro	-0.075	0.140*	0.067	0.177**	0.152**
	(0.073)	(0.072)	(0.075)	(0.089)	(0.075)
basisonderwijs	-0.240	-0.151	0.115	0.117	0.015
	(0.157)	(0.153)	(0.158)	(0.184)	(0.159)
vmbo	-0.068	-0.090	0.217***	0.299***	0.102

	(0.082)	(0.080)	(0.084)	(0.099)	(0.084)
mbo+havo/vwo	-0.070	-0.082	0.171**	0.132	0.157**
	(0.076)	(0.075)	(0.078)	(0.089)	(0.078)
Region North	-0.083	-0.308***	-0.276***	-0.130	0.032
	(0.096)	(0.094)	(0.098)	(0.113)	(0.099)
Region East	0.090	-0.171**	-0.094	-0.004	-0.048
	(0.080)	(0.079)	(0.082)	(0.096)	(0.082)
Region South	0.021	-0.204***	-0.180**	-0.026	-0.077
	(0.077)	(0.076)	(0.079)	(0.092)	(0.079)
Not in a job now, but worked before	-0.103	0.031	-0.031	0.205*	0.089
	(0.099)	(0.098)	(0.101)	(0.122)	(0.102)
(Early) retirement	-0.145	0.027	0.016	0.140	0.132
	(0.106)	(0.104)	(0.108)	(0.127)	(0.108)
Teacher (self-identification)	-0.186**	0.456***	0.221**	0.126	0.031
	(0.089)	(0.088)	(0.092)	(0.106)	(0.092)
Nurse (self-identification)	-0.372***	-0.151*	0.053	-0.025	-0.042
	(0.082)	(0.080)	(0.084)	(0.098)	(0.084)
Construction Worker (self-identification)	-0.258**	-0.247**	-0.327***	0.049	-0.164
	(0.110)	(0.107)	(0.110)	(0.132)	(0.111)
Fireman (self-identification)	-0.160	-0.054	-0.161	0.087	0.392***
	(0.143)	(0.139)	(0.143)	(0.169)	(0.149)
Constant	-	0.577	1.494***	2.275***	2.768***
		(0.461)	(0.470)	(0.516)	(0.476)
Willingness to contribute					
κ_j	1.480***	1.282***	0.764***	0.569***	0.659***
	(0.074)	(0.061)	(0.042)	(0.038)	(0.035)
Female name of vignette person	-0.129	-0.017	0.127	-	-
	(0.093)	(0.086)	(0.078)		
gender respondent	-0.204	-0.164	0.088	0.098	0.010
	(0.143)	(0.139)	(0.139)	(0.143)	(0.141)
age	-0.071**	-0.061**	-0.009	-0.013	-0.020
	(0.031)	(0.030)	(0.031)	(0.031)	(0.031)
age squared	0.001**	0.001*	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Family income less than 1150 Euro	0.340	0.433*	0.224	0.238	0.161
	(0.266)	(0.256)	(0.255)	(0.262)	(0.257)
Family income between 1151 and 1800 Euro	0.255	0.158	0.113	-0.006	0.196
	(0.197)	(0.192)	(0.192)	(0.198)	(0.194)
Family income between 1801 and 2600 Euro	0.203	-0.046	0.141	0.220	0.228
	(0.155)	(0.151)	(0.151)	(0.155)	(0.152)
basisonderwijs	0.539*	0.132	-0.150	-0.217	-0.250
	(0.319)	(0.309)	(0.311)	(0.321)	(0.316)
vmbo	0.292	-0.164	-0.271	-0.353*	-0.145
	(0.179)	(0.176)	(0.178)	(0.182)	(0.178)
mbo+havo/vwo	0.115	-0.028	-0.186	-0.133	-0.068
	(0.164)	(0.160)	(0.161)	(0.164)	(0.161)
Region North	0.477**	0.288	0.334*	0.352*	0.156
	(0.205)	(0.200)	(0.203)	(0.208)	(0.204)
Region East	0.141	0.208	0.145	0.153	-0.009
	(0.178)	(0.175)	(0.175)	(0.180)	(0.177)
Region South	0.039	-0.077	-0.115	-0.051	-0.198
	(0.163)	(0.158)	(0.157)	(0.160)	(0.158)

Not in a job now, but worked before	0.631***	0.320	0.324	0.145	0.251
	(0.209)	(0.203)	(0.203)	(0.209)	(0.204)
(Early) retirement	-0.062	-0.110	0.033	0.215	0.258
	(0.225)	(0.221)	(0.222)	(0.228)	(0.223)
Teacher	0.134	-0.069	-0.014	-0.043	-0.014
	(0.189)	(0.185)	(0.184)	(0.189)	(0.185)
Nurse	0.694***	0.310*	0.367**	0.423**	0.371**
	(0.175)	(0.168)	(0.168)	(0.173)	(0.170)
Construction Worker	0.369	0.350	0.541**	0.648***	0.587**
	(0.240)	(0.233)	(0.232)	(0.237)	(0.233)
Fireman	0.519*	0.204	0.461	0.207	0.474
	(0.302)	(0.293)	(0.290)	(0.297)	(0.293)
Pension premium increase	-0.057	-0.307	-0.174	-0.103	-0.171
	(0.245)	(0.240)	(0.234)	(0.238)	(0.235)
Increase of two years in the statutory retirement age	-0.330	-0.484**	-0.148	0.048	0.009
	(0.245)	(0.239)	(0.234)	(0.238)	(0.235)
Missing	-0.204	-0.388	-0.030	0.026	0.019
	(0.260)	(0.254)	(0.249)	(0.252)	(0.250)
Constant	-	-0.599	-1.211*	-0.592	-0.308
		(0.617)	(0.643)	(0.690)	(0.665)
c_1			-0.135		
			(0.372)		
c_2			0.863**		
			(0.373)		
c_3			2.320***		
			(0.374)		
c_4			3.948***		
			(0.375)		
d_1			-1.628*		
			(0.957)		
d_2			0.566		
			(0.955)		
d_3			2.449**		
			(0.955)		
d_4			5.190***		
			(0.956)		
σ_ϑ			0.604***		
			(0.018)		
σ_ϕ			2.724***		
			(0.077)		
τ $(correlation\ coefficient)$			0.515***		
			(0.021)		
number of observations			1771		
Log likelihood			-18085		

Standard errors in parentheses, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. Reference person has tertiary education degree ('HBO or WO'), a household income higher than 2600 Euros, is a male, lives in the West of the Netherlands, has a desk job. Furthermore, he answers the questions with a male name. Region of the Netherlands: West = Noord- and Zuid-Holland, Utrecht and Zeeland; North = Groningen, Friesland and Drenthe; East = Overijssel, Flevoland and Gelderland; South = Noord-Brabant and Limburg.

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