The effect of announced statutory retirement age change on retirement plans of starters on the Dutch labour market

Discussion paper No. 64

Theo Smid
Siemen van der Werff

seo economic research

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Summary

Abstract: The Netherlands has to cope with the financial burden of an aging population. Due to the economic downturn, reforms to the current old age social security system are more pressed than ever before. Although an increase in the eligibility age for a state pension has been high on the policy agenda for years, until recently no incumbent government proposed concrete plans to raise the eligibility age. In this paper, we consider the effect of the 2009 plans of the Dutch government to increase the statutory retirement age to 67 (from 65) on the preferred retirement age of starters on the Dutch labour market. To study this effect, we analyze the impact of newspaper publicity regarding the upcoming pension reforms on the preferred retirement age. Furthermore, we analyze how planned retirement ages correlate with various demographic and socio-economic indicators. Our results indicate that the planned retirement age made a substantial jump after the intended increase of the eligibility age for a state pension was announced. Nevertheless, we find that media content on the eligibility age has no effect on the preferred retirement age. Other variables, such as labour market characteristics, are better predictors of retirement plans.

1   Introduction

It is well recognized that demographic changes pose a great challenge to the welfare states of OECD countries. Almost every developed nation is experiencing significant population aging owing to falling fertility rates and increasing life expectancy. The old-age dependency ratio (i.e. the ratio of people older than 65 relative to those of working age) is projected to double between 2000 and 2050 in OECD countries on average (Whiteford and Whitehouse, 2006). For the Netherlands, the old-age dependency ratio is bound to increase to around 40% by 2040. Given the demographic challenges ahead, governments of OECD countries struggle to find ways to keep their public finances sustainable. Many countries have already undertaken a wide range of pension reforms to deal with this issue (OECD, 2009). In the wake of the financial crisis a second wave of reforms followed as some countries were required to take severe measures to keep their government deficits and debts in check. Greece has equalized the normal pension ages of men and women at 65. France decided to increase the minimum eligibility age for a public pension to 62. Most recently Ireland has decided to increase the pension age in several steps to 68 by 2028.

The Netherlands currently faces a fiscal sustainability gap of 4.5% of its GDP, amounting to 29 billion euro (Van der Horst et al., 2010). To close the fiscal gap, reforms to the social security system are unavoidable. The old age social security system has been an issue in the policy debates for years. A worked out plan to reform this system was finally proposed by the centrist Balkenende-IV government in 2009. The proposal entailed that the statutory retirement age was to be increased to 67 (from 65). Before 2009, the eligibility age for the AOW (the Dutch state pension) was a much debated issue but no major political party risked losing votes by proposing to raise the retirement age. During the financial and economic crisis however the debate over the retirement age was reinforced. Billions of additional government debt was issued in order to save financial institutions from bankruptcy, making it clear that reforms to the old age social security system were unavoidable. In February 2010 the government resigned over a dispute about the military mission in Afghanistan. Important policy decisions (including the eligibility age for the AOW) have been put on hold. Any reforms to the public pension system are left to the new government.[1]

In this paper, we study the developments in the preferred retirement age of new entrants on the Dutch labour market for the period 2005-2010. This is done using survey data under recent graduates from Dutch institutions of higher education. Higher education graduates represent approximately 45% of total graduates of tertiary education in the Netherlands. The other 55% are people with a vocational education degree. This latter group is not included in the survey. Extensive public policy discussion in recent years regarding an increase in the eligibility age for a state pension makes it particularly worthwhile to study the development of preferred retirement

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[1]   On October 14 2010 a new minority government led by the VVD and CDA political parties took seat. This government has indicated to increase the AOW eligibility age to 66 in 2020, and explores the possibility to link the AOW age to life expectancy. These new developments are not captured by the data used in our analysis in the remainder of this paper. We therefore refer to the original plans of increasing the statutory retirement age to 67.

ages. Due to recent political developments, the chances of a reform of the current old age social security system have increased. Under the rational expectations hypothesis, individuals would incorporate this new information in their predictions of the future and adjust their retirement plans accordingly (see e.g. Benítez-Silva and Dwyer, 2005). We investigate whether people actually incorporate public policy decisions regarding the AOW eligibility age through an analysis of the effect of the policy change on the preferred retirement age. The policy change (i.e. the proposal to increase the retirement age to 67) is both directly modelled, as well as incorporated in a variable that measures the amount of news coverage on the AOW eligibility age. As the data include an extensive set of background variables about individuals and their jobs, we are also able to estimate the effect of these variables.

Another aim of this paper is to analyze whether retirement expectations correlate with observable demographic and socio-economic characteristics (such as gender, age, income and hours worked). Early work on this topic includes Wolpin and Gonul (1985), who use demographic and labour market data (wage, hours worked) to predict expected retirement ages of older men in the National Longitudinal Survey of Labour market experience. Bernheim (1989) performed a similar analysis using Retirement History Survey Data. More recent examples of studies that model retirement expectations are Disney and Tanner (1999) for the UK, Benítez-Silva and Dwyer (2005), Wong and Hardy (2009), Munnell et al. (2004) and Michaud and Van Soest (2007) for the US, and Cobb-Clark and Stillman (2006) for Australia. Similar research on retirement expectations in the Netherlands has been done by Bissonette et al. (2009), who use data from the CentERpanel. Using the same panel, Van der Wiel (2009) analyzes the impact of newspaper articles on the expectations regarding the future eligibility age for old age social security. We hope to contribute to this body of literature. While most existing literature focuses on modelling retirement expectations, this paper uses the retirement age at which respondents "want" to stop working. Although there is a conceptual distinction, we expect the impact of this difference to be small in practice.[2] Contrary to Bisonette et al. (2009) and Van der Wiel (2009) who focus on the entire Dutch population older than 25, we restrict our analysis to young graduates at Dutch institutions of higher education who just entered the labour market. Individuals in our sample are on average 26 years old. Another difference is that we specifically focus on the preferred retirement age, while the previous authors have looked at the expected probability given by respondents that the AOW eligibility age will be increased/decreased over the next 10 or 20 years. Bissonette et al. (2009) have also looked at whether people expect that the average retirement age will increase/decrease over the next 10 or 20 years.

Modelling retirement expectations is important for at least two reasons. First, there seems to be general consensus that expectations have predictive power over realizations, and affect actual behaviour (Michaud and Van Soest, 2007). This particularly applies to retirement expectations. Bernheim (1989) shows that individuals are reasonably competent at forming relatively accurate expectations about the timing of retirement. Using the UK Retirement Survey, Disney and Tanner (1999) show that for about half the sample of individuals older than 55 retirement predictions coincide with actual retirement dates. Interestingly, the accuracy of retirement age predictions is found to be quite stable across demographic and socio-economic characteristics,

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[2]   When respondents are asked when they "want" to stop working, they are likely to give a realistic (given their current information) estimate of when they are able to do so. That is, they are most likely expressing an expectation regarding their retirement age.

except that women seem to be more accurate in their predictions than men. Benítez-Silva and Dwyer (2005) analyze dynamics in retirement in the Health and Retirement Survey and show that individuals correctly anticipate most uncertain events. Their analysis focuses on older married couples. If retirement expectations are indeed indicative of realizations, then public policies targeted towards altering retirement patterns must alter people's beliefs about retirement, which requires a better understanding of the retirement expectations formation process. In this respect, one needs to recognize that retirement expectations are not random, to the extent that they are correlated with the observable risk factors that are known to affect actual retirement behaviour (such as gender, wealth and pension status). Second, expectations do not merely predict actual future behaviour, but also affect current savings behaviour and wealth accumulation. Dominitz and Manski (1997) for example analyze data from the Survey of Economic Expectations, and suggest that cross-sectional variation in the spread of income expectations may account for at least some of the observed cross-sectional variation in savings. In a similar fashion, rational individuals will change their savings and wealth accumulation patterns in response to a shift in retirement expectations.

The remainder of this paper is organized as follows. In section 2, we briefly discuss the literature on expectations formation. Section 3 describes the data we use as well as some empirical issues that arise in the sample selection process. In section 4, we examine trends and developments in the retirement age expectations of new entrants on the labour market. In addition, we explore the possible influence of public policy decisions and news coverage on these retirement expectations. Section 5 introduces a retirement expectation model in which news coverage on the AOW eligibility age is formally included, as well as a host of demographic and socio-economic characteristics. Estimates obtained using this model will be discussed. Finally, section 6 concludes.

2   Literature on expectations formation

Among the earliest theories of expectations formation is the rational expectations hypothesis proposed by Muth (1961). Under the rational expectations hypothesis agents are assumed to use all currently available information to predict the future value of economically relevant variables, while predictions are assumed not to be systematically biased. Thus it is assumed that outcomes that are being forecast do not differ systematically from market equilibrium results. Expectations formation plays an important role in the literature on inflation expectations (Gramlich, 1983; Keane and Runkle, 1990; Souleles, 2004). Other applications include expectations of equity returns (Dominitz and Manski, 2005), income expectations (Dominitz, 2001), length of life expectations (Hurd and McGary, 1995), job loss expectations (Stephens, 2004) and retirement expectations (Benítez-Silva and Dwyer, 2005). Expectations play a key role in modern life cycle theory. To identify behavioural models, economists are frequently forced to invoke a variety of strong assumptions concerning the structure of expectations. For instance, many studies assume that consumers understand the social security benefit formulae, and form their expectations 'rationally'. There is empirical evidence that the rational expectations assumption does not always hold. Already when confronted with simple risky prospects, individuals display behaviour that is a departure from rational choice, such as the phenomenon of 'loss aversion' (Tversky and Kahneman, 1974). Indeed, there is evidence that not all relevant and available information is incorporated in expectations (see e.g. Bernheim, 1987; Figlewski and Wachtel, 1981; and Carroll, 2003).

Mankiw and Reis (2002) have introduced an alternative theory: the sticky expectations model. In this expectations formations model, the costs of acquiring and processing information and of reoptimizing lead agents to update their information sets and expectations sporadically. Each period, only a fraction of the population update their information set and adjust expectations accordingly, while the rest of the population continues to act according to their pre-existing expectations based on old information. Van der Wiel (2009) uses the sticky expectations model to analyze the influence of newspaper publicity on the expectations of different socio-economic groups regarding the future eligibility age for the Dutch state pension (AOW). She finds that higher educated individuals, those who frequently read a newspaper and those with average knowledge of Dutch politics adapt their expectations less often in periods with high publicity about the AOW eligibility age than individuals who are lower educated and less well informed. An explanation for this result is that the higher educated and well informed individuals have such a high-quality initial expectations set that information disseminated through the media does not induce them to change their policy forecasts. If this interpretation is correct, the changes in the retirement age expectations of the higher educated individuals used in this survey might be an underestimation of the expectation changes of the Dutch population in total over the same period. Given that our sample presumably consists of people with a high-quality initial expectation set, the effect of news coverage on retirement age expectations should be moderate according to Van der Wiel (2009).

3   Data and sample selection

This paper is based on data from the *Studie & Werk* survey, which is a yearly survey carried out by SEO Economic Research and commissioned by *Elsevier*[3]. The purpose of *Studie & Werk* is to collect information on the labour market position of graduates that have recently left Dutch institutions of higher education. They are graduates from research intensive universities and universities of applied sciences (HBOs). Respondents are interviewed roughly 18 months after graduation, which implies that most of them have found a stable job by the time of interviewing. The survey contains questions on a number of relevant labour market variables: e.g. job search, salary, secondary labour contract agreements, number of previous jobs held and various other topics. In addition, extensive demographic and socio-economic background information is being collected: e.g. gender, age, marital status, ethnicity, living region, type of schooling, average grade, number of years in HBO/university, and several other socio-economic characteristics. A first basic analysis of retirement age estimations has been published in Berkhout and Van der Werff (2009) and Berkhout and Smid (2010). This paper builds on the results of that analysis.

The *Studie & Werk* survey is being conducted since 1997 on a yearly basis. Individuals are questioned each year in the months January and February. A random sample is taken from the Dienst Uitvoering Onderwijs (DUO), the institution that registers student enrolments in the Netherlands. The sample is stratified using sampling weights to adjust both for unequal selection probability for field of study and unequal expected response percentage for gender and field of study. First, because various studies differ a great deal in terms of the number of students that are enrolled, the sample is stratified to ensure that every field of study has a sufficient sample size. Second, since the response percentage is known to differ across field of study and gender, this is also taken into account when stratifying the sample. The total sample (across all studies) includes approximately 30,000 individuals in any given year. Roughly 25-30% of these (7,000 to 9,000 individuals) have historically filled out the questionnaire. Although data are being collected over the past 12 years, the questions regarding the planned retirement age of individuals have only been included since 2005. This implies that the data used in this study only apply to the last six consecutive years, i.e. 2005-2010.

The exact wording of the question relevant to this paper is:

"At which age do you want to stop working?"
*   *Before 55*
*   *At 55*
*   *...*
*   *At 69*
*   *70 or older*
*   *I haven't seriously thought about it*

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[3]   *Elsevier* is a weekly opinion magazine that particularly targets higher educated people and various segments of the commercial sector. It regularly distributes 'special' issues on particular themes. An example is *Studie & Werk*, which discusses the labour market prospects by field of study of graduates from Dutch institutes of higher education.

One methodological issue is how to treat the subsample of respondents who say that they do not know when they prefer to retire. This may simply reflect lazy or uninformed responses. Alternatively, 'don't know' responses may constitute rational responses by those who face greater uncertainty regarding their future labour market behaviour (Disney and Tanner, 1999; Cobb-Clark and Stillman, 2006). In our sample, the fraction of respondents claiming that they do not know when they prefer to retire is approximately one-third. Between 2005 and 2010, however, this share has profoundly increased, pointing at greater uncertainty. A likely explanation for the rising percentage of 'don't know' responses is the political pressure in recent years to reform the pension system, engendering graduates' uncertainty about their planned date of retirement. This issue will be discussed more thoroughly in the next section.

Table 1   Preferred retirement age known/unknown (%)

	2005	2006	2007	2008	2009	2010
Preferred retirement age	71.0	68.5	67.7	67.3	65.7	62.6
Don't know	29.0	31.5	32.3	32.7	34.3	37.4
No. of observations	8,931	7,997	8,231	5,964	6,538	6,826

Source: SEO/Elsevier (2010)

To investigate whether individuals who indicate they 'don't know' when they prefer to retire differ in demographic and socio-economic characteristics from individuals who do show a preference, we run a Logit regression on a dummy variable that takes the value 1 if someone gives a 'don't know' answer. The Logit estimation is run on the complete sample, i.e. after pooling all cohorts together.

In Table 6.3, the mean values of the dependent and independent variables are displayed for each cohort. The variable labels are also displayed. The means of most variables appear to be quite stable over time. To identify possible cohort effects in our sample, we ran t-tests on the mean values of explanatory variables. We compare the values of each variable in one particular year with its value in the previous year. In total we therefore consider five periods, i.e. 2005-2006, 2006-2007, 2007-2008, 2008-2009 and 2009-2010. For most variables significant differences are found for at least one out of five periods, when 5% is taken as the confidence level. Among them are background characteristics such as gender, age, marital status, number of children (women), educational level, average grade and experience on the board of a student organization. Other variables such as ethnicity, educational level of the father and mother, and living region remained relatively stable over time.

Considering labour market variables, the mean values of variables corresponding to type of labour contract change considerably over time. The same holds true for hours worked and wage per hour. While most fluctuations in mean values seem quite random, there appear to be some structural developments as well. An example is the declining proportion of men amongst higher education graduates, which is attributable to the feminization of higher education in the Netherlands. Another example is the rising proportion of university graduates, which is at least partly attributable to reforms in the Dutch higher education system which made research

intensive universities more accessible.[4] In relation to the labour market, the mean values of the type of labour contract variables show large up and down swings over time. For instance, the share of permanent contracts increased by almost 10% between 2006 and 2008, after which it declined again by 12% between 2008 and 2010. This pattern corresponds to movements in the business cycle. In periods of strong economic growth, employers will be more lenient in awarding permanent contracts, whilst in periods of economic downturn more flexible labour contracts will be used. Business cycle effects are also visible in the wage per hour between 2006 and 2008, although there was no significant decline in the wage over the last two years, despite the economic downturn.

Estimation results of the Logit regression, summarized in Table 6.4, provide some empirical support that the occurrence of 'don't know' responses correlates with particular characteristics. According to marginal effects estimates the probability of a 'don't know' response is 3% higher for women. This means that women on average tend to be more uncertain about the age at which they plan to retire, which is not surprising given the complexity of women's labour supply more generally (Cobb-Clark and Stillman, 2006). Another observation consistent with the existing literature is that uncertainty about retirement decreases with age. Hence, younger respondents for whom the moment of actual retirement is further away, and who thus face greater uncertainty over future retirement, are more likely to give a 'don't know' response (Disney and Tanner, 1999). Ethnicity is also a relevant explanatory variable. Foreign Dutch nationals have a 3% lower probability of giving a 'don't know' response. The likelihood of a 'don't know' response is 7% higher for university graduates compared to HBO graduates, and is increasing with someone's average grade at university/HBO. Moreover, the probability that someone does not know when he or she prefers to retire is decreasing with hours worked and wage per hour. This suggests that the greater the individual's involvement and success (expressed in hours worked and wage per hour) on the labour market, the less likely they give a 'don't know' response. Other studies also find that workers with a stronger labour force attachment, as reflected by the number of years on job, employer changes, and job attitudes, have greater stability in their expectations toward retirement (Wong and Hardy, 2009).

Logit regressions on 'don't know' responses were also carried out separately for men and women. This allows the identification of gender-specific effects on the probability of belonging to the sample of non-respondents. Estimates mostly point at similarities between men and women, except for the impact of having a partner on the probability of giving a 'don't know' answer. This probability is lower for men who have a partner, but has no significant effect for women. This observation is in contradiction with existing studies, which usually find that husbands influence wives' retirement decisions more than wives affect their husbands' decisions. This is because retirement for married women typically occurs within the context of their spouses' work and retirement behaviour (Johnson, 2004). Because women typically accumulate lower lifetime wages and employer benefits than men, marriage offers women another avenue of access to financial resources as well as social and human capital (Pienta et al., 2000). The fact that women in our sample are young and higher educated, and therefore more financially independent than married women observed in most studies, may explain why having a partner has no impact on women's

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[4]   In particular, it has become easier for HBO students to enter research intensive universities (Marginson et al., 2008).

preferred retirement age. It cannot explain, however, why for men having a partner does have a significant effect.

While the large sample sizes lend support to the validity of the results, at the same time the proxy nature of many of the variables used and the correlation between some variables demand that the results are interpreted with caution. What is certain however is that the probability of giving 'don't know' responses is not random across the population and that the group who answer with 'don't know' is of substantial size. This type of item non-response generates data that is hard to interpret and that pose a number of problems that are difficult to test for and solve in empirical models (Van Soest and Hurd, 2004; Kleinjans and Lee, 2006). The selectivity of the sample of respondents who provided a preferred retirement age should therefore be kept in mind when retirement age become the object of analysis, as is the case elsewhere in this paper.

4   Developments in preferred retirement ages

When individuals of the most recent cohort (who graduated in 2007/2008) are asked about their retirement age, 48% of the men and 50% of the women in our sample indicate that they plan to retire before the age of 65. Moreover, 76% of men and 86% of women plan to retire before the age of 67. Given the very real possibility that the AOW eligibility age will be increased to 67, this means that the great majority of young graduates prefer to retire before they are eligible for a state pension. Given that financial and housing wealth tend to be strongly increasing in education (see e.g. Mitchell and Moore, 1997), it is not unlikely that many in these cohorts have the financial means to realize their preference. However, the will to retire early could also be influenced by a degree of myopia among these individuals.

The distribution of preferred retirement ages of the 2010 cohort is given in Figures 1 and 2. For both men and women there is a spike at the retirement age of 65: 27% of the men plan to retire at the age of 65, while for women this is 35%. It is not surprising that 65 is the most mentioned retirement age given that it is the age at which all Dutch citizens have historically become eligible for AOW (state pension) and it has become almost a social norm to retire at this age. The fraction of men and women who plan to retire at 67 is much lower (10% for men, 8% for women), despite recent notions of upcoming reforms to the state pension system. This might be attributed to several causes: sticky preferences, the fact that 65 has become embedded as the 'normal' age to retire, or it may display the willingness amongst higher educated to consume part of their private wealth to be able to retire at 65 (regardless of what happens to the statutory retirement age). Surprisingly, the second-most mentioned retirement age is 60, instead of 67. One in five men and one in four women prefer to retire five years before the state pension starts to pay out. Again, this shows that many young graduates plan to accumulate enough financial wealth to be able to stop working before they are eligible for a state pension.

Figure 1   Distribution of planned retirement ages of men (2010)

Planned retirement age (men)

Source: SEO/Elsevier (2010)

Figure 2   Distribution of planned retirement ages of women (2010)

**Planned retirement age (women)**

Source: SEO/Elsevier (2010)

Over the period 2005-2010, the preferred retirement ages of men and women have steadily increased (Figure 3). In 2010, the mean preferred pension age of men was 62.8 year. Five years before, men still planned to retire two years earlier. In 2010, women planned to retire at an average age of 62.3, compared to 59.6 in 2005. While men still expect to work longer than women, the difference in retirement ages between men and women decreased from almost one year in 2005 to 0.5 year in 2010. The smaller gender gap could be related to women's increasing participation on the labour market, and concomitant awareness about pending reforms to the old age social security system. In 2005 and 2006, the actual mean retirement age of elderly cohorts of men more or less coincided with the preferred retirement ages of the younger cohorts. However, in 2007 there was an increase in the actual retirement age of men from 61 to 62. Although not shown in the figure, this increase is part of a rising trend in retirement ages that set off in the early 1990s due to a phasing out of Early Retirement Schemes (VUT)[5] (Bovenberg and Gradus, 2008). While the actual pension age of men rose, this was not followed by an equal increase in the preferred retirement age among young graduates. In 2007, the difference between the actual and preferred retirement age of men was almost one year. For women, increases in the actual pension age were less steep than for men, and were followed by similar increases in the preferred pension age. Nevertheless, the difference between the two was still approximately one year in 2007.

What stands out in Figure 3 is the rise in preferred retirement ages in 2010, which is more pronounced compared to the years before. We suspect this is in part attributable to the heightened policy discussion and subsequent media attention concerning an increase in the AOW eligibility age, which emerged over the course of 2009. Although an increase of the statutory retirement age has been under scrutiny of policymakers for years, the debate heightened after the financial and economic crisis. During 2009 the AOW eligibility age has been much in the news as the Balkenende-IV government proposed a plan to increase the retirement age to 67.[6] To investigate whether there was really a break in preferred retirement ages in 2010, Figure 4 shows the fraction of respondents that planned to retire before particular key retirement ages, i.e. 60, 65 and 67. The share of respondents planning to retire before 60 has been decreasing almost linearly over the period 2005-2010. Interestingly, this linear decline does not seem to hold for those who report to retire before 65 and 67. For those groups the decline in preferred retirement ages from 2009 to 2010 was more pronounced than the linear trend from the previous years would implicate. This is probably the result of the announced policy reform with respect to the AOW eligibility age in 2009. The trend break is the motivation to include a linear trend with the addition of a dummy for survey year 2010 in the model for the direct change in the planned retirement age (see section 5).

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[5]   Early Retirement Schemes (VUT) were introduced in the early 1980s as a means of combating youth unemployment. In view of the increasing costs for employers as a result of the ageing workforce, some reforms were implemented. Higher labour force participation was encouraged through a replacement of VUT schemes by funded early retirement schemes. In addition, tax benefits for early retirement schemes and VUTs were gradually eliminated, which also discouraged elderly from retiring early.

[6]   The exact plan implied that all Dutch citizens born in or after 1955 would have to work longer. Those born between 1955 and 1959 would receive an AOW pension at the age of 66. Those born in 1960 or later would be eligible for AOW at the age of 67. Retiring before the statutory retirement age remains possible, although the pension would then be cut back in an actuarially fair way.

Figure 3   Trends in planned retirement ages

Actual and planned retirement ages
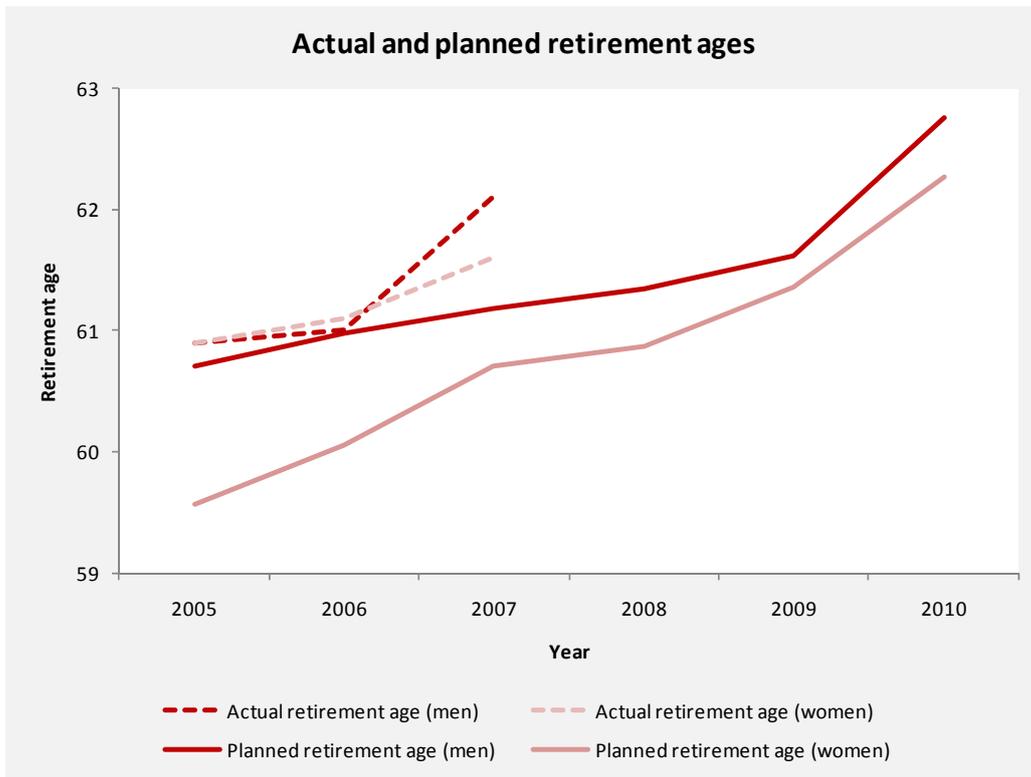
Source: SEO/Elsevier (2010) and CBS Statline (2010)

Figure 4   Trends in planned retirement ages

Sample fraction planning to retire before a certain age
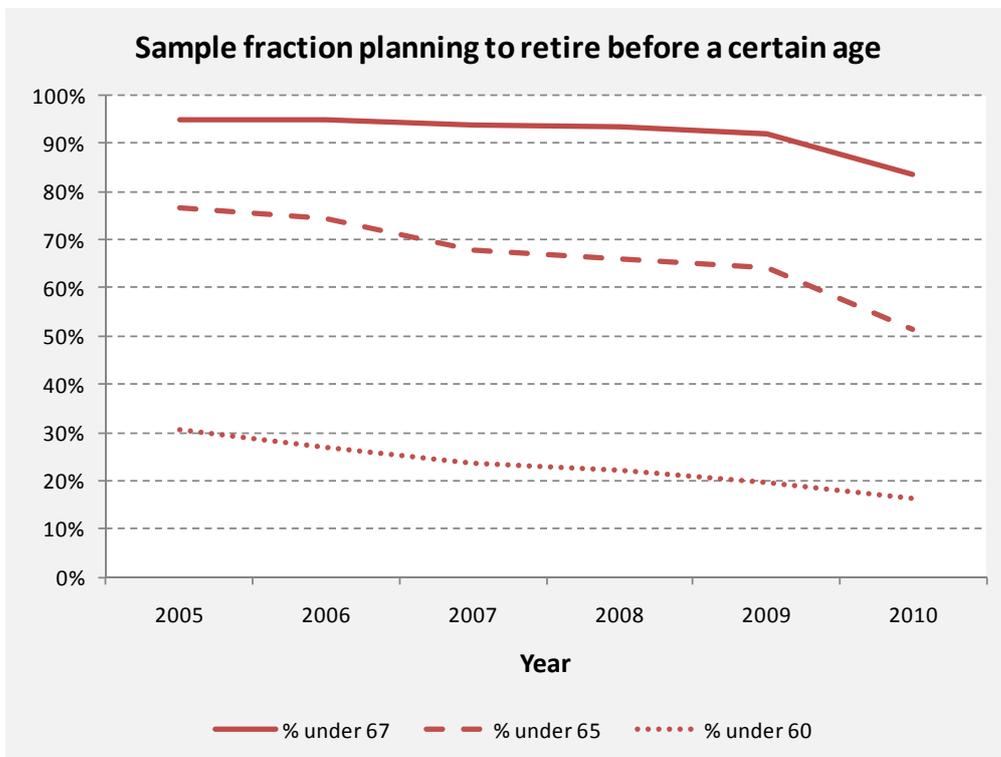
Source: SEO/Elsevier (2010)

In the following, we analyze the possible impact of publicity on retirement age preferences. Empirical evidence on the connection between publicity and expectations formation is provided by e.g. Carroll (2003), Lama and Lein (2008) and Van der Wiel (2009). Following Van der Wiel (2009), public information dissemination, or publicity, is defined here as the information concerning the entity at interest (the AOW or retirement age) that is disseminated through various public media outlets. Information that is absorbed by individuals can be publicized through various media outlets such as television programmes, Internet blogs and magazine and newspaper articles. It is technically impossible to quantify all informational elements. Therefore, we restrict the analysis to the number of newspaper articles published by Dutch national newspapers (see Appendix A for a list of newspapers). Although newspapers are not the only available media outlet, newspaper articles can be more easily retrieved than other information sources. The underlying assumption is that the correlation between the publicity intensity across all media outlets is very strong. Since we are only interested in relevant newspaper articles, the analysis is restricted to the quantity of newspaper articles that mention 'AOW' and/or 'pension age'. Data on the quantity of newspaper articles is retrieved through LexisNexis[7], a database of written Dutch media content. For the period 2005-2010, we have generated monthly series of newspaper articles that contained the acronym 'AOW' and/or 'pension age' in their total content.

Considerable variation in the number of relevant newspaper articles can be observed (Figure 5). Also there are several observable peaks in publicity quantities, particularly in March and October 2009. While some of the smaller publicity peaks before 2009 have deducible information cause, we will only trace back the events that have led to the major publicity peaks in March and October 2009, as well as the smaller peak in June 2010. In February 2009, a special government-appointed committee ('committee Gerritse') presented a green paper (discussion document) on a number of 'sustainability measures' that could be taken to combat the economic crisis. Also on the list was the idea of linking the AOW eligibility age to the life expectancy. During most of March 2009 there were talks between the parties forming the cabinet about which measures would be implemented. At the end of March 2009 it was decided that the AOW eligibility age would be increased to 67. Members of the Social-Economic Council (SER), representing unions and employers' organizations, were given the decision to either accept the increase in the AOW age or propose an alternative plan before October 2009. Failing to agree on an alternative, the government decided to stick with its initial plan of increasing the AOW eligibility age. Details of this reform were presented in October 2009 (see footnote 6). This again generated abundant media attention. Finally, in June 2010 the AOW eligibility age gained news coverage as it became an important issue in the elections held in that month. Four months earlier, the government resigned over Netherlands' military presence in Afghanistan. Many pending reforms (including the AOW eligibility age) were declared 'controversial' and are left over to the new government to decide upon.

Figure 6 gives a year-by-year illustration of the publicity quantities alongside the mean of preferred retirement ages of the different cohorts of graduates. Publicity quantities are measured from January-December each year, while retirement ages are measured approximately in January each year. Publicity quantities remained on a relatively low level over 2005-2008 after which there was a sudden increase in 2009 (owing to the events discussed above). Publicity quantity for 2010 is lower because it only includes newspaper articles until July. Considering the steep rise in

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7   http://www.lexisnexis.nl

newspaper articles on 'AOW' and 'pension age' during 2009 – many of which covered the government proposal of increasing the statutory retirement age – it is not surprising that the average planned retirement age displays a higher than average increase in 2010 as well. Many individuals appear to have adjusted their policy forecasts in response to the information on the statutory retirement age that was disseminated through the media in 2009. In other words, over the course of 2009 retirement age preferences adjusted to the newly imposed plans to increase the AOW eligibility age, which shows up in the stated preferences of the cohort surveyed in 2010.

Figure 5   Planned retirement ages and news coverage on 'AOW' and 'pension age'

'AOW' or 'pension age' in newspaper content
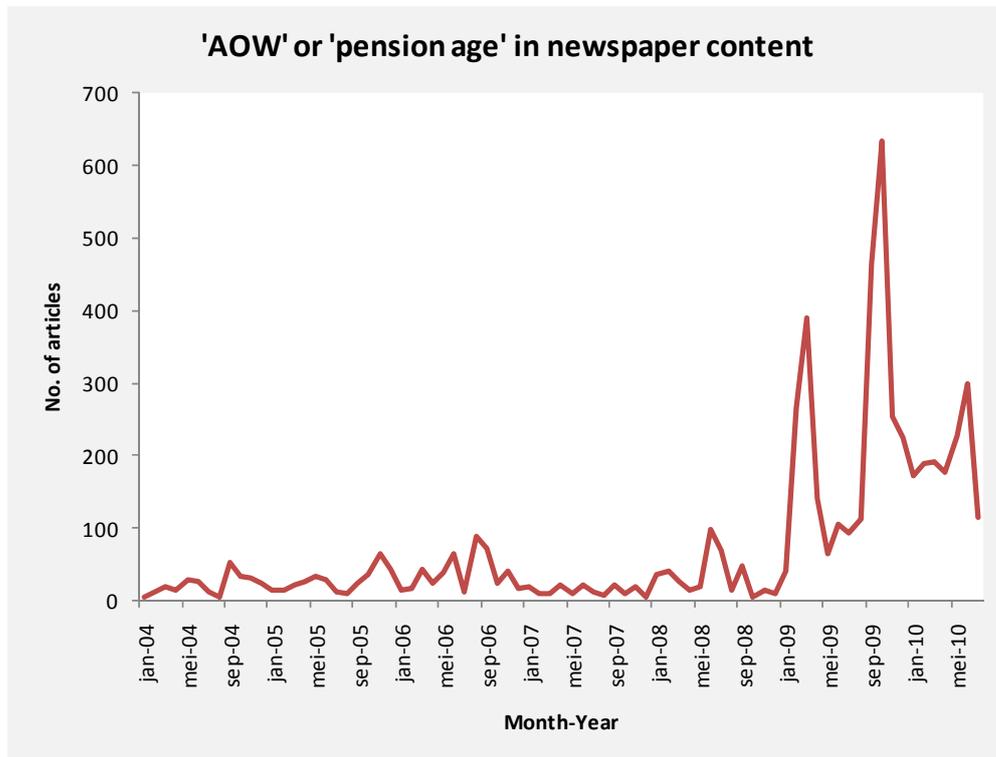
Source: SEO/Elsevier (2010) and LexisNexis (2010)

Figure 6   Planned retirement ages and news coverage on 'AOW' and 'pension age'

Planned retirement ages
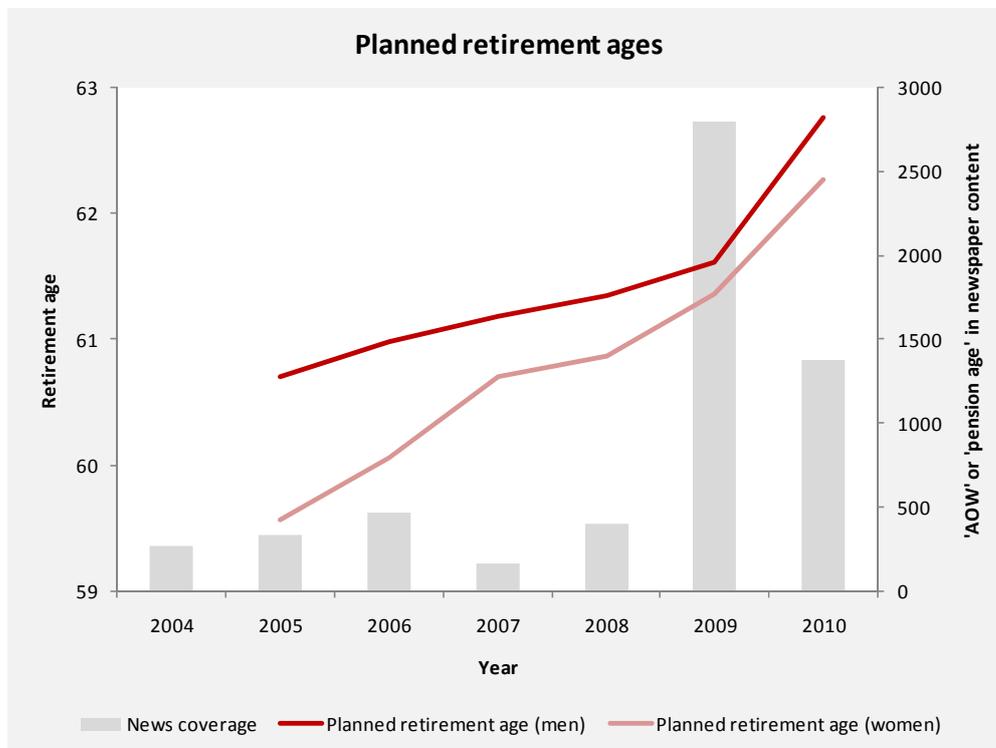
Source: SEO/Elsevier (2010) and LexisNexis (2010)

5   Modelling retirement preferences

To investigate the extent to which heterogeneity in retirement beliefs can be explained from individual characteristics, we model retirement preferences on a set of demographic, socio-economic and other variables. The independent variables used have been identified in the existing empirical literature to matter in explaining the expected retirement age (see e.g. Disney and Tanner, 1999; Cobb-Clark and Stillman, 2006; Wong and Hardy, 2009). In addition, we include some variables (e.g. average grade, field of study, working sector) that have not been used (regularly) in the empirical literature. One novel feature of our estimation procedure is therefore that we include a more extensive set of explanatory variables than most other authors. Another new feature is that we use the preferred retirement age as the dependent variable instead of the more widely used expected retirement age. The analysis is done on the complete sample, i.e. for all cohorts. A two-limit Tobit specification is used to take into account the censored nature of the dependent variable. The independent variables that are included are first of all a number of demographic characteristics: a dummy variable with value 1 if the respondent is a male, age of the respondent, a dummy taking the value 1 if the respondent has one or more children, a dummy equal to 1 if the respondent is a foreign Dutch national (allochtoon), a dummy equal to 1 if the respondent has a partner and a set of dummies for the region someone lives in (with West as the reference category). We also include a number variables related to education: a dummy with value 1 if the respondent graduated at university (as opposed to HBO), dummies for the educational level of the father and mother of the respondent (the benchmark is 'lbo, mavo'), dummies for type of study followed (reference category is 'Law and Governance'), average grade at HBO/university and a dummy equal to 1 if the respondent was at some point during his/her studies a member of the board of a student organization.

To capture labour market status, we include hours worked per week (according to the labour contract), wage per hour (Euros, before taxes), labour satisfaction, dummies for type of contract (the benchmark is 'permanent contract'), dummies signifying the sector the respondent works in (reference category is 'commercial services'), dummies on the educational level required for current job (reference category is 'university') and a dummy equal to 1 if the respondent takes a PhD position. The model furthermore controls for survey year and includes a dummy equal to 1 if the respondent participated in the survey of 2010. The latter variable is included to identify the effect on retirement age preferences of the governments' plans to increase the AOW age (made public in October 2009), which is hypothesized to have its effects on retirement preferences of the 2010 cohort. Another reason to include this dummy is because the increase in planned retirement age was more pronounced in 2010 than in previous years, implying there was a trend break (see Figure 3). A final variable included is the number of newspaper articles published each year containing the term 'AOW-age' or 'pension age'. This should identify any effects that publicity quantity has on the retirement preferences of respondents. This variable is included with a lag of one year as the number of newspaper articles in a particular year only show up in the preferences of respondents the next year (as respondents are interviewed in January-February each year).

The estimated marginal effects and standard errors are presented in Table 2. The results show that many of the included demographic, socio-economic and other variables correlate with planned retirement age. Pseudo R^2 is nevertheless quite low. We consider the significance/non-significance of variables at the 5%-level. Male respondents prefer to retire significantly later than females. The preferred retirement age is also increasing with age (see also Wong and Hardy, 2009). For every additional year the planned retirement age increases on average by 0.05 year. The preferred retirement age is also lower for people with a partner and for women who have (a) child(ren). It also depends on the living region. Compared to inhabitants of West-Netherlands (the benchmark), people in the South plan to retire 0.3 year earlier, while people in the North plan to retire 0.3 year later. Respondents who are registered as foreign Dutch national (those for whom one or both of parents are born outside the Netherlands) prefer to retire 0.6 year earlier than natives. Educational variables also explain much of the variation in planned retirement ages. Average grade at HBO/university exerts a positive effect on retirement age. For each additional GPA the planned retirement increases on average by 0.3 year. Respondents with experience on the board of a students' organization also prefer to retire later. University graduates furthermore prefer to retire 0.5 year later than HBO graduates. When these educational variables would be taken as proxies for student ability, then the implication is that more able students on average prefer to retire later. Perhaps these students are better informed about developments regarding the AOW eligibility age and more rational in translating the consequences for their own future retirement. Also the educational level of the mother has an effect on the planned retirement age. Respondents whose mother has a HBO or university degree plan to retire later. For those whose mother has a university degree the preferred retirement age is even 1 year higher on average than the ones whose mother has only lower education. A final educational variable that is associated with retirement age is the field of study. Graduates in the field of 'Art and Culture', 'Behaviour and Society', 'Earth and Environment', 'Exact sciences and IT' and 'Engineering' prefer to retire later than students of the reference category ('Law and Governance'). Conversely, graduates of 'Business and Economics' prefer to retire earlier.

Table 2   Tobit regression on the planned retirement age

Dependent variable	Planned retirement age	Coefficient	Marginal effect	Standard Error
Year_2010_male	Dummy survey year 2010 for men	1.8244	1.8244	0.7968**
Year_2010_female	Dummy survey year 2010 for women	1.2745	1.2745	0.7924
Year_male	Survey year for men	0.2029	0.2029	0.0360***
Year_female	Survey year for women	0.5049	0.5049	0.0314***
News_t-1	Publicity quantity in year previous to survey year	-0.0004	-0.0004	0.0003
Male	Dummy for male	607.0152	607.0152	94.8827***
Age	Age	0.0524	0.0524	0.0144***
Child	Dummy for having a child	-0.4640	-0.4640	0.2113**
Avggrade	Average grades in higher education	0.3226	0.3226	0.0586***
Board_exp	Experience board student association during study	0.2893	0.2893	0.0670***
Ethnicity	Dummy for non-dutch ethnicity	-0.6291	-0.6291	0.0921***
Edufather_2	Vocational education for father	-0.0230	-0.0230	0.0857
Edufather_3	HBO for father	-0.1133	-0.1133	0.0896
Edufather_4	Research-intensive university for father	-0.0457	-0.0457	0.1110
Edumother_2	Vocational education for mother	0.0499	0.0499	0.0775
Edumother_3	HBO for mother	0.4239	0.4239	0.0907***
Edumother_4	Research-intensive university for mother	1.0326	1.0326	0.1519***
Partner	Living together with a partner	-0.1291	-0.1291	0.0627**
Study_1	Field of study: education & child studies	0.2869	0.2869	0.1663*
Study_2	Field of study: language & communication	0.1026	0.1026	0.1606
Study_3	Field of study: art & culture	1.4935	1.4935	0.2048***
Study_5	Field of study: economics & business	-0.3475	-0.3475	0.1221***
Study_6	Field of study: behaviour & society	0.6167	0.6167	0.1463***
Study_7	Field of study: health	0.2551	0.2551	0.1643
Study_8	Field of study: earth & environment	0.7883	0.7883	0.1911***
Study_9	Field of study: exact sciences & IT	0.5914	0.5914	0.1917***
Study_10	Field of study: engineering	0.5630	0.5630	0.1582***
North	Dummy for living in the North of the Netherlands	0.2605	0.2605	0.1142**
East	Dummy for living in the East of the Netherlands	0.1380	0.1380	0.0830*
South	Dummy for living in the South of the Netherlands	-0.2501	-0.2501	0.0803***
Laboursat	Satisfaction with current job (scale 1-10)	0.1723	0.1723	0.0257***
University	Dummy for research-intensive university education	0.5122	0.5122	0.1035***
Contract_2	Contract type: temporary; option for permanent	0.0627	0.0627	0.0700
Contract_3	Contract type: temporary	0.2765	0.2765	0.1064***
Contract_4	Contract type: self-employed	0.0606	0.0606	0.2274
Contract_5	Contract type: temp hire agency	0.3478	0.3478	0.1675**
Edujob_1	Requirement for current job: lower education	0.3644	0.3644	0.3431
Edujob_2	Requirement for current job: higher general educ.	-0.3654	-0.3654	0.3374
Edujob_3	Requirement for current job: vocational education	0.0592	0.0592	0.1557
Edujob_4	Requirement for current job: preparatory scientific educ.	-1.0032	-1.0032	0.4900**
Edujob_5	Requirement for current job: HBO	-0.1940	-0.1940	0.1126*

Dependent variable	Planned retirement age	Coefficient	Marginal effect	Standard Error
Sector_1	Sector of current job: agriculture/fishery	-0.2127	-0.2127	0.3443
Sector_2	Sector of current job: industrial	-0.1462	-0.1462	0.1362
Sector_3	Sector of current job: energy	0.2027	0.2027	0.3121
Sector_4	Sector of current job: construciton	0.3854	0.3854	0.1774**
Sector_5	Sector of current job: wholesale	-0.2425	-0.2425	0.2296
Sector_6	Sector of current job: retail	-0.3426	-0.3426	0.2098
Sector_7	Sector of current job: catering industry	0.4109	0.4109	0.2907
Sector_8	Sector of current job: transport	-0.4502	-0.4502	0.2082**
Sector_9	Sector of current job: financial institutions	0.0285	0.0285	0.1360
Sector_11	Sector of current job: government & public services	0.5459	0.5459	0.1351***
Sector_12	Sector of current job: education	0.5750	0.5750	0.1415***
Sector_13	Sector of current job: health care	0.3248	0.3248	0.1326**
Sector_14	Sector of current job: culture, sports & recreation	0.6293	0.6293	0.2076***
Sector_15	Sector of current job: other, none of the above	0.1976	0.1976	0.1958
Hours_work	Hours of contractual work in current job	-0.0251	-0.0251	0.0056***
Wage	Hourly wage in current job	-0.0508	-0.0508	0.0068***
Phd	Dummy for current job being a PhD candidate	0.9253	0.9253	0.1908***
_cons		-956.7928		62.9693***
No. of observations		20897		
Log likelihood		-59255.586		
Pseudo R^2		0.0154		

Notes to table:

1 * Significant at 10% ** Significant at 5% *** Significant at 1%.

Retirement ages are negatively correlated with wage per hour, implying that high income earners on average plan to retire earlier than low income earners. For every additional Euro wage per hour (before taxes) the preferred retirement age decreases by 0.05 year. Given the spread in wages the lowest yearly 2.5th percentile income earners would on average prefer to retire 1 year later than the highest 2.5th percentile. The same holds true for the number of hours worked per week. For every additional hour worked per week (according to contract) the planned retirement age decreases by 0.03 year. The difference between the highest and the lowest 2.5th percentile is approximately 0.8 year. Preferred retirement age is positively related to labour satisfaction in the current job. For every additional point (on a scale 0-10) of labour satisfaction the planned retirement age increases with 0.2 year. Hence the individual who values his/her job with a 10 plans to retire approximately one year later than the individual valuing his/her job with a 5. Respondents working on a temporary contract or employed by a temporary hire agency prefer to retire later than people working on a permanent contract. Respondents working in a job for which a vwo (preparatory scientific education) high school diploma is required also prefer to retire earlier than those working in jobs for which a university qualification is required. People working in the real estate, governmental, educational, health, and cultural, sports & recreational sectors plan to retire later than people in the commercial services sector. Finally, graduates working on their PhD prefer to retire almost one year later than those who do not.

The variable concerning the number of newspaper articles including the term 'AOW-age' or 'pension age' is not significant. This means that in the specified model newspaper content on AOW and pension age has no effect on retirement preferences of individuals in our sample. However, given that the bulk of newspaper articles on these topics were generated in 2009, it may be possible that the effect of this variable is captured by the dummy variables for survey year 2010, which have been included separately for men and women. These variables have been incorporated to signify the policy change that occurred in 2009 (i.e. the proposal to raise the AOW eligibility age to 67). The effects of this policy change on retirement plans were first visible in 2010, and caused a trend break in retirement plans that year. To explore this possibility a regression was run that did not including the dummy variables for survey year 2010. In this slightly different specification the variable on newspaper publicity is positive and highly significant, as was hypothesized.

As an extension to the above analysis, obtained regression results were used to generate predictions of the planned retirement age of out-of-sample individuals. These predictions show that there is no significant difference in the mean retirement age between the sample of individuals who have given a preferred retirement age and the sample consisting of 'don't know' responses. As a result, one can conclude that this latter group does not differ that much from the former group. Thus, regression results do not seem to be skewed that much. The predicted preferred retirement age for the 'don't know' sample is even slightly higher than those of the sample who stated a preferred retirement age, so it is unlikely to be an overestimation.

It was showed in Figure 1 and Figure 2 that the three most common preferred retirement ages are 60, 65 and 67, which are also the most relevant retirement ages considering the different (early) retirement policies in place. Figure 4 also shows that the share of people planning to retire before these ages has been declining in recent years. Three Logit models are estimated with dummies for 'plans to retire at 60 or later', 'plans to retire at 65 or later' and 'plans to retire at 67 or later' as dependent variables. Hence for these regressions the sample is divided in two subsamples of respondents, one with individuals who want to retire before a certain age and one with individuals who want to retire at that age or later. The goal of the government is of course to get this second group as large as possible. Roughly the same set of explanatory variables is included as in previous specifications. The results can be found in Table 6.5. A number of demographic and socio-economic variables are found to be significant in one or more specifications, including gender, age, average grade, experience on the board of a student organization, ethnicity, educational level of the mother and father, field of study, living region and respondents' educational level. Furthermore, many labour market variables including labour satisfaction, type of contract, education required by employer, working sector, number of hours worked, wage per hour and having a PhD position, were also found to be of importance in explaining these specific retirement ages. This is also true for survey year. When these regression results are compared with the Tobit estimates in Table 2, some variables turn out insignificant in the Logit estimation that were previously found to be relevant in explaining the preferred retirement age. Age for instance is only found to be significant in the specification using a retirement age of 67 or above. The dummy for children, which was significant in the Tobit estimation, is also insignificant in the Logit estimations. Ethnicity only matters in the specification using a pension age of 60 or above, and having a partner is only significant at the 10% level in the specification using a pension age of 65 or above.

Some explanatory variables are significant in one or two Logit specifications but not in the other(s). In certain cases even the sign of the effect may turn from significantly positive to significantly negative depending on the specification. Average grade and experience on the board of a students' organization are more relevant in explaining whether a respondent plans to retire at age 67 or above, than at age 60 or above. Equally wage per hour and hours worked are significant in the specifications using a preferred retirement age of 65 or above and 67 or above, but not in the model using a retirement age of 60 or above. On the other hand, ethnicity is significant in the specification using a preferred retirement age of 60 or above, but does not explain a great deal of variation in the other two models. Interestingly, the linear trend is found to be significant in all three models, but the additional dummy for the 2009 policy change is not found to be significant in all three specifications. This shows that the steep decline in the fraction of individuals reporting to retire before 65 or 67 (as illustrated in Figure 4) cannot be attributed to the policy change. An alternative explanation is that this result is caused by cohort effects, i.e. changes in demographic and socio-economic characteristics of the sample.

In addition, a number of interesting observations can be made about labour market characteristics. Being self-employed has a diverging impact on the preferred retirement age depending on the specification used: self-employment has a significantly negative effect in the specification using a planned retirement age of 60 or above, while it exerts a significantly positive influence in the specification using a retirement age of 67 or above. Self-employed respondents are therefore more likely to retire at 67 or later and less likely to retire at 60 or later, in comparison to the base category of people on a permanent contract. Respondents whose employer requires a MBO or HBO degree are less likely to plan to retire from the age of 67, while in the other specifications this variable has no significant effect (taking a university degree as the reference category). Moreover, hours worked and wage exert a significantly negative effect on the probability to retire from the age of 67, but are not significant in explaining the probability of retiring from the age of 60. Finally, being a PhD student makes it likely that someone retires from the age of 60 and 65, while it has no significant effect on the probability of retiring from the age of 67.

The new right-wing government consisting of the political parties VVD (conservative-liberals) and CDA (Christian-democrats) has announced plans to increase the statutory retirement age to 66 by 2020, and explores the possibility of linking the AOW age to life expectancy.[8] Therefore, from a policy point of view the logit regression using a retirement age of 67 or above seems to be the most relevant to discuss more in depth. A number of socio-economic and demographic variables are significant in explaining the probability of planning to retire at the age of 67 or later. Men on average plan to retire later than women. Older individuals are more likely to plan to retire at 67 or later than younger ones. Average grade and experience on the board of a student organization exert a positive effect on the likelihood to retire at 67 or later, as does having a university degree. The educational level of the mother is relevant to the extent that respondents whose mother has higher education are on average more likely to retire at 67 or later than respondents whose mother has an lbo or mavo degree. Respondents living in Southern and Eastern parts of the Netherlands are significantly less likely to retire from the age of 67 in comparison with individuals living in the West. People with temporary contracts and self-

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[8]   These plans have been made long after the 2010 survey took place, so they have not influenced the outcome of our analysis.

employed are less likely to retire from the age of 67 than those on permanent contracts. Also when the respondent holds a job for which a MBO or HBO degree is required, the probability that he or she retires at 67 or above is lower in comparison to someone holding a university-degree job. Hours worked and wage per hour exert a negative influence on the probability that someone prefers to retire at 67 or later. Since hours worked and wage were not found to be significant in the specification using a dummy for planning to retire from the age of 60, the implication is that the higher the stated retirement ages become, the greater the influence of these variables. In other words, the group reporting a retirement age of 60 or later is much more heterogeneous in terms of hours worked and wage than the group reporting a preferred retirement age of 67 or above. Translated to labour market status, the 67 group has a much lower current labour market attachment (i.e. lower wage, fewer working hours) than the 60 group. Finally, the positive effect of survey year shows that respondents have become more willing to postpone retirement in recent years in which the survey was held.

6   Conclusion

Increasing the actual retirement age of elderly has for years been high on the political agenda in
the Netherlands. This paper uses a 2009 proposal by the Dutch government to increase the
eligibility age for a state pension (AOW) to 67 (from 65) to estimate the impact on retirement age
preferences of young graduates from institutions of higher education. To better understand these
preferences, we also modelled retirement preferences on an extensive set of demographic and
socio-economic variables. The proposed policy reform is also included in the model, as is an
additional variable that measures the amount of news coverage on the AOW eligibility age. This
latter variable is included to measure the impact of publicity quantity regarding the policy reform
on retirement plans.

Respondents on average plan to retire several years before the official AOW eligibility age. In
2010 men on average planned to retire at 62.8 years and women at 62.3 years. This is more than
two years before the official AOW eligibility age of current retirees and more than four years
before the government proposed official eligibility age for future retirees. Just a small fraction of
individuals prefer to retire at 67 or later. Apparently surveyed individuals are either myopic or
willing to sacrifice some of their future financial and housing wealth to retire early. On the other
hand we observe that retirement age preferences have been increasing over the last couple of
years. These increases were particularly pronounced in 2010. The fraction of individuals planning
to retire before 67 declined substantially in this year. The assumption made is that this is partly
attributable to the 2009 announced policy reform with respect to the AOW eligibility age, which
is first visible in the 2010 survey results. News about the policy reform was widely distributed
through various media outlets throughout 2009. Model estimates show that the policy reform
proposed in 2009 positively affected retirement preferences of men, whereas no significant effect
was found for women. Policy reform in this case was formally expressed by a dummy variable for
survey year 2010, which was the first year when retirement preferences could have been affected
by the proposed reform. A variable measuring publicity quantity on the topics 'AOW' and
'pension age' was not found to be significant. The effect of this variable is however captured to a
large extent by the dummy signifying the policy reform itself. The preferred retirement age was
also found to correlate with a large number of demographic and socio-economic variables. Male
respondents plan to retire significantly later than females. The preferred retirement age is also
increasing with age. It is also lower for people with a partner and for women with (a) child(ren).
Perhaps most important from a policy point of view are variables related to labour market
performance. The planned retirement age is found to decrease by 0.03 year for every additional
hour worked per week (according to contract). It is also found to decrease by 0.05 year for every
additional unit of hourly wage (Euros, before taxes). Hence the most successful individuals on
the labour market are the ones who retire relatively early. A final variable that influences the
preferred retirement age is job satisfaction. For every additional point of job satisfaction (which is
measured on a scale 1-10), the average retirement age increases by 0.2 year. Hence the individual
who values his/her job with a 10 plans to retire approximately one year later than the individual
valuing his/her job with a 5.

There are a number of ways in which the analysis in this paper can be extended. One research opportunity that certainly deserves attention is the inclusion of risk aversion and time preference in our model. It is a well established fact for instance that more risk averse people tend to invest in relatively safe pension investment portfolios. In a similar vein, risk aversion may also influence the timing of retirement. More risk seeking individuals could use the retirement age as a buffer against various shocks (health, financial, et cetera) they endure during the life cycle. Individuals in our sample are still 40 years or so away from retiring, which implies that the shocks they will face during their working life still largely have to materialize. Less risk averse individuals are expected to invest their wealth in more risky portfolios, with a potentially higher return. This higher expected return allows them to retire earlier on average than more risk averse people. It would therefore be interesting to see whether risk aversion has any effect on the planned retirement age of these young graduates. At the same time also time preference is expected to influence the planned retirement age. People with relatively high discount rates (i.e. those who value the present most) could report overoptimistic (early) retirement ages. The fact that they attach more value to the present may lead to irrational preferences with regard to their retirement age. It was already demonstrated in this paper that retirement preferences of young graduates are below current actual retirement ages, even in the face of knowing that the statutory retirement age is certainly more likely to go up than to go down. In any future publication on this topic we therefore aim to control for risk aversion and time preference as well.

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Appendix A

The following Dutch national newspapers have been included in the data retrieval:

- AD / Algemeen Dagblad
- Metro
- Het Parool
- Trouw
- Agrarisch Dagblad
- Nederlands Dagblad
- Reformatorisch Dagblad
- De Volkskrant
- Dag
- NRC Handelsblad
- Spits!
- Het Financiële Dagblad
- NRC.NEXT
- De Telegraaf

Source: LexisNexis (2010)

Appendix B

Table 6.3   Mean values of variables

Variable	Label	2005	2006	2007	2008	2009	2010
Pensage	Planned retirement age	60.0532	60.4589	60.8904	61.2196	61.3105	62.3158
Male	Dummy for male	0.4438	0.4312	0.4383	0.4335	0.4261	0.4370
Age	Age	25.3428	25.5367	25.5992	26.3594	25.5197	25.6781
Child	Dummy for having a child	0.0132	0.0172	0.0202	0.0436	0.0206	0.0230
Avggrade	Average grades in higher education	7.1649	7.1476	7.1921	7.2067	7.1932	7.1810
Board_exp	Experience board student association during study	0.3560	0.3694	0.3731	0.3640	0.3143	0.3329
Ethnicity	Dummy for non-dutch ethnicity	0.1165	0.1255	0.1337	0.1375	0.1447	0.1328
Edufather_1	Lower education for father	0.2803	0.2850	0.2739	0.2677	0.2566	0.2668
Edufather_2	Vocational education for father	0.2603	0.2624	0.2646	0.2537	0.2625	0.2417
Edufather_3	HBO for father	0.2778	0.2714	0.2664	0.2866	0.3020	0.2971
Edufather_4	Research-intensive university for father	0.1715	0.1718	0.1821	0.1778	0.1683	0.1858
Edumother_1	Lower education for mother	0.4516	0.4522	0.4188	0.3927	0.3970	0.3804
Edumother_2	Vocational education for mother	0.2879	0.2785	0.2927	0.3181	0.2894	0.2904
Edumother_3	HBO for mother	0.2042	0.2080	0.2207	0.2202	0.2377	0.2486
Edumother_4	Research-intensive university for mother	0.0500	0.0550	0.0545	0.0589	0.0632	0.0732
Partner	Living together with a partner	0.4881	0.4806	0.4787	0.5056	0.4670	0.4936
Study_1	Field of study: education & child studies	0.1480	0.1259	0.1329	0.1359	0.1395	0.1270
Study_2	Field of study: language & communication	0.0641	0.0605	0.0594	0.0587	0.0708	0.0691
Study_3	Field of study: art & culture	0.0318	0.0309	0.0340	0.0336	0.0462	0.0351
Study_4	Field of study: law & governance	0.0864	0.0925	0.1002	0.0925	0.0894	0.1168
Study_5	Field of study: economics & business	0.2274	0.2503	0.2496	0.2428	0.2401	0.2261
Study_6	Field of study: behaviour & society	0.1200	0.1265	0.1236	0.1521	0.1242	0.1314
Study_7	Field of study: health	0.1178	0.1331	0.1243	0.1229	0.1326	0.1305
Study_8	Field of study: earth & environment	0.0324	0.0411	0.0416	0.0338	0.0410	0.0448
Study_9	Field of study: exact sciences & IT	0.0622	0.0409	0.0380	0.0336	0.0238	0.0334
Study_10	Field of study: engineering	0.1098	0.0983	0.0962	0.0940	0.0924	0.0857
North	Dummy for living in the North of the Netherlands	0.0772	0.0788	0.0895	0.0906	0.0871	0.0947
East	Dummy for living in the East of the Netherlands	0.1885	0.1941	0.1855	0.1889	0.2035	0.1853
South	Dummy for living in the South of the Netherlands	0.2190	0.2410	0.2093	0.2017	0.1942	0.2044
West	Dummy for living in the West of the Netherlands	0.5153	0.4861	0.5157	0.5188	0.5152	0.5157
Laboursat	Satisfaction with current job (scale 1-10)	7.3100	7.3524	7.4223	7.4555	7.4491	7.4744
University	Dummy for research-intensive university education	0.3477	0.3783	0.3936	0.3643	0.3219	0.3876
Contract_1	Contract type: permanent	0.4773	0.4404	0.4426	0.5301	0.4693	0.4107

Variable	Label	2005	2006	2007	2008	2009	2010
Contract_2	Contract type: temporary; option for permanent	0.3051	0.3295	0.3606	0.3010	0.3353	0.3688
Contract_3	Contract type: temporary	0.1537	0.1505	0.1391	0.1232	0.1358	0.1692
Contract_4	Contract type: self-employed	0.0190	0.0174	0.0246	0.0217	0.0247	0.0170
Contract_5	Contract type: temp hire agency	0.0449	0.0622	0.0331	0.0240	0.0350	0.0341
Edujob_1	Requirement for current job: lower education	0.0116	0.0105	0.0107	0.0061	0.0056	0.0124
Edujob_2	Requirement for current job: higher general educ.	0.0096	0.0106	0.0122	0.0051	0.0106	0.0076
Edujob_3	Requirement for current job: vocational education	0.1165	0.1113	0.0861	0.0807	0.0902	0.0860
Edujob_4	Requirement for current job: preparatory scientific educ.	0.0052	0.0049	0.0027	0.0056	0.0042	0.0011
Edujob_5	Requirement for current job: HBO	0.6094	0.5828	0.5855	0.6152	0.6301	0.5893
Edujob_6	Requirement for current job: research-intensive university	0.2477	0.2798	0.3028	0.2874	0.2593	0.3035
Sector_1	Sector of current job: agriculture/fishery	0.0065	0.0091	0.0062	0.0105	0.0073	0.0130
Sector_2	Sector of current job: industrial	0.0929	0.0727	0.0762	0.0825	0.0824	0.0614
Sector_3	Sector of current job: energy	0.0125	0.0120	0.0104	0.0086	0.0076	0.0095
Sector_4	Sector of current job: construciton	0.0387	0.0488	0.0421	0.0488	0.0464	0.0342
Sector_5	Sector of current job: wholesale	0.0222	0.0208	0.0240	0.0147	0.0121	0.0263
Sector_6	Sector of current job: retail	0.0242	0.0233	0.0241	0.0264	0.0263	0.0232
Sector_7	Sector of current job: catering industry	0.0153	0.0130	0.0113	0.0103	0.0120	0.0107
Sector_8	Sector of current job: transport	0.0320	0.0262	0.0235	0.0147	0.0301	0.0225
Sector_9	Sector of current job: financial institutions	0.0542	0.0786	0.0839	0.0683	0.0632	0.0764
Sector_10	Sector of current job: commercial services	0.2009	0.1836	0.2094	0.1857	0.1785	0.1801
Sector_11	Sector of current job: government & public services	0.0788	0.0792	0.0709	0.0801	0.0640	0.0754
Sector_12	Sector of current job: education	0.1853	0.1708	0.1827	0.1536	0.1646	0.1585
Sector_13	Sector of current job: health care	0.2081	0.2140	0.1983	0.2370	0.2227	0.2330
Sector_14	Sector of current job: culture, sports & recreation	0.0210	0.0212	0.0256	0.0252	0.0335	0.0337
Sector_15	Sector of current job: other, none of the above	0.0074	0.0267	0.0116	0.0335	0.0492	0.0420
Hours_work	Hours of contractual work in current job	35.7621	35.6565	35.8474	36.0624	35.9406	35.8724
Wage	Hourly wage in current job	14.6156	14.5299	14.9823	15.9369	15.3811	15.6816
Phd	Dummy for current job being a PhD candidate	0.0401	0.0397	0.0448	0.0257	0.0396	0.0521
No. of observations		8,931	7,997	8,231	5,964	6,538	6,826

Table 6.4   Logit regression on 'don't know' dummy

Dependent variable	Planned retirement age: 1 = Don't know 0 = Estimate known			
		Coefficient	Marginal effect	Standard Error
Year	Survey year	0.0821	0.0177	0.0136***
Year_2010_all	Dummy for survey year 2010	0.2868	0.0640	0.4966
News_t-1	Publicity quantity in year previous to survey year	-0.0001	0.0000	0.0002
Male	Dummy for male	-0.1219	-0.0262	0.0439***
Age	Age	-0.0378	-0.0082	0.0091***
Child	Dummy for having a child	-0.0340	-0.0073	0.1480
Avggrade	Average grades in higher education	0.0874	0.0189	0.0333***
Board_exp	Experience board student association during study	0.0141	0.0031	0.0396
Ethnicity	Dummy for non-dutch ethnicity	-0.1491	-0.0315	0.0559***
Edufather_2	Vocational education for father	0.0227	0.0049	0.0513
Edufather_3	HBO for father	-0.0802	-0.0172	0.0530
Edufather_4	Research-intensive university for father	0.0272	0.0059	0.0636
Edumother_2	Vocational education for mother	-0.0322	-0.0069	0.0460
Edumother_3	HBO for mother	0.0054	0.0012	0.0533
Edumother_4	Research-intensive university for mother	-0.0486	-0.0104	0.0858
Partner	Living together with a partner	-0.0252	-0.0054	0.0371
Study_1	Field of study: education & child studies	-0.0499	-0.0107	0.0977
Study_2	Field of study: language & communication	0.1313	0.0289	0.0836
Study_3	Field of study: art & culture	0.3276	0.0743	0.0927***
Study_5	Field of study: economics & business	0.0179	0.0039	0.0746
Study_6	Field of study: behaviour & society	0.1116	0.0245	0.0790
Study_7	Field of study: health	0.1048	0.0230	0.0851
Study_8	Field of study: earth & environment	0.3195	0.0724	0.0821***
Study_9	Field of study: exact sciences & IT	0.4173	0.0957	0.0845***
Study_10	Field of study: engineering	0.0777	0.0170	0.0813
North	Dummy for living in the North of the Netherlands	0.0554	0.0121	0.0692
East	Dummy for living in the East of the Netherlands	0.0483	0.0105	0.0488
South	Dummy for living in the South of the Netherlands	-0.0223	-0.0048	0.0477
Laboursat	Satisfaction with current job (scale 1-10)	0.0221	0.0048	0.0151
University	Dummy for research-intensive university education	0.3045	0.0666	0.0502***
Contract_2	Contract type: temporary; option for permanent	-0.1074	-0.0230	0.0424**
Contract_3	Contract type: temporary	-0.0243	-0.0052	0.0620
Contract_4	Contract type: self-employed	-0.0002	-0.0001	0.1250
Contract_5	Contract type: temp hire agency	-0.0993	-0.0211	0.0956
Edujob_1	Requirement for current job: lower education	0.2332	0.0524	0.1712
Edujob_2	Requirement for current job: higher general educ.	0.1392	0.0308	0.1781
Edujob_3	Requirement for current job: vocational education	0.1315	0.0289	0.0819
Edujob_4	Requirement for current job: preparatory scientific educ.	-0.3902	-0.0778	0.2288*
Edujob_5	Requirement for current job: HBO	0.0295	0.0064	0.0529
Sector_1	Sector of current job: agriculture/fishery	-0.1732	-0.0362	0.2606
Sector_2	Sector of current job: industrial	-0.0926	-0.0197	0.0794
Sector_3	Sector of current job: energy	-0.3182	-0.0645	0.1629*

Dependent variable	Planned retirement age: 1 = Don't know 0 = Estimate known			
		Coefficient	Marginal effect	Standard Error
Sector_4	Sector of current job: construciton	0.0250	0.0054	0.0943
Sector_5	Sector of current job: wholesale	-0.1276	-0.0269	0.1588
Sector_6	Sector of current job: retail	0.0298	0.0065	0.1244
Sector_7	Sector of current job: catering industry	-0.1297	-0.0273	0.1593
Sector_8	Sector of current job: transport	-0.1855	-0.0387	0.1192
Sector_9	Sector of current job: financial institutions	-0.2070	-0.0432	0.0846**
Sector_11	Sector of current job: government & public services	0.0256	0.0056	0.0705
Sector_12	Sector of current job: education	0.1750	0.0386	0.0737**
Sector_13	Sector of current job: health care	-0.1145	-0.0244	0.0701
Sector_14	Sector of current job: culture, sports & recreation	0.1179	0.0260	0.1067
Sector_15	Sector of current job: other, none of the above	0.0389	0.0085	0.1135
Hours_work	Hours of contractual work in current job	-0.0122	-0.0026	0.0033***
Wage	Hourly wage in current job	-0.0179	-0.0039	0.0040***
Phd	Dummy for current job being a PhD candidate	0.0830	0.0182	0.0865
_cons		-164.7178		27.2922***
No. of observations		31794		
Pseudo R2		0.0162		

Notes to table:

1 * Significant at 10% ** Significant at 5% *** Significant at 1%.

Table 6.5   Logit regressions on planned retirement ages 60, 65 and 67

Dependent variable		1=planned retirement age 60 or above	0=other	1=planned retirement age is 65 or above	0=other	1=planned retirement age is 67or above	0=other
		Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Year	Survey year	0.1825	0.0193***	0.1842	0.0170***	0.1309	0.0329***
Year_2010_all	Dummy for survey year 2010	0.4360	0.7041	0.7834	0.6213	1.2386	1.0675
News_t-1	Publicity quantity in year previous to survey year	-0.0002	0.0003	-0.0002	0.0003	-0.0002	0.0004
Male	Dummy for male	0.1674	0.0594***	0.3397	0.0536***	1.1984	0.0952***
Age	Age	0.0028	0.0118	0.0167	0.0109	0.1008	0.0187***
Child	Dummy for having a child	-0.1454	0.2126	-0.1350	0.1966	-0.2489	0.2629
Avggrade	Average grades in higher education	0.0456	0.0491	0.1094	0.0429**	0.4438	0.0696***
Board_exp	Experience board student association during study	0.0913	0.0549*	0.1192	0.0489**	0.3317	0.0796***
Ethnicity	Dummy for non-dutch ethnicity	-0.4058	0.0667***	-0.1075	0.0660	-0.0478	0.1200
Edufather_2	Vocational education for father	0.0494	0.0689	-0.1078	0.0662	-0.1081	0.1255
Edufather_3	HBO for father	-0.0256	0.0744	-0.0687	0.0678	-0.2037	0.1231*
Edufather_4	Research-intensive university for father	-0.0406	0.0893	-0.0232	0.0781	0.1385	0.1297
Edumother_2	Vocational education for mother	0.0422	0.0648	-0.0139	0.0590	0.0444	0.1054
Edumother_3	HBO for mother	0.2117	0.0752***	0.1017	0.0669	0.1030	0.1162
Edumother_4	Research-intensive university for mother	0.4473	0.1200***	0.3261	0.0993**	0.3871	0.1636**
Partner	Living together with a partner	-0.0298	0.0504	-0.0798	0.0460*	-0.0491	0.0812
Study_1	Field of study: education & child studies	0.4034	0.1287***	-0.1446	0.1220	-0.4171	0.2479*
Study_2	Field of study: language & communication	0.1090	0.1148	-0.0168	0.1074	-0.0310	0.1855
Study_3	Field of study: art & culture	0.5755	0.1395***	0.3379	0.1150***	0.6639	0.1714***
Study_5	Field of study: economics & business	-0.1310	0.0936	-0.2210	0.0914**	-0.1698	0.1611
Study_6	Field of study: behaviour & society	0.4025	0.1101***	0.0309	0.0992	0.2012	0.1696
Study_7	Field of study: health	0.4398	0.1229***	-0.1345	0.1074	-0.5179	0.2000**
Study_8	Field of study: earth & environment	0.3323	0.1168***	0.2514	0.1001**	0.2735	0.1617*
Study_9	Field of study: exact sciences & IT	0.3961	0.1252***	0.2648	0.1057**	-0.1443	0.1781
Study_10	Field of study: engineering	0.3829	0.1113***	0.1192	0.0996	-0.0282	0.1599

Dependent variable		1=planned retirement age 60 or above	0=other	1=planned retirement age is 65 or above	0=other	1=planned retirement age is 67or above	0=other
North	Dummy for living in the North of the Netherlands	0.2178	0.0977**	-0.0152	0.0886	-0.2801	0.1579*
East	Dummy for living in the East of the Netherlands	0.2033	0.0698***	-0.0791	0.0618	-0.2948	0.1124***
South	Dummy for living in the South of the Netherlands	-0.0260	0.0639	-0.2034	0.0611***	-0.4289	0.1163***
Laboursat	Satisfaction with current job (scale 1-10)	0.0535	0.0209**	0.0858	0.0203***	0.0852	0.0367**
University	Dummy for research-intensive university education	0.3002	0.0718***	0.1951	0.0620***	0.2941	0.1171**
Contract_2	Contract type: temporary; option for permanent	0.0426	0.0571	0.0745	0.0533	0.2158	0.1009**
Contract_3	Contract type: temporary	0.0221	0.0944	0.1164	0.0762	0.4076	0.1365***
Contract_4	Contract type: self-employed	-0.4505	0.1536***	0.2363	0.1416*	1.1792	0.1957***
Contract_5	Contract type: temp hire agency	0.0488	0.1279	0.2572	0.1200**	0.4135	0.2195*
Edujob_1	Requirement for current job: lower education	0.0300	0.2446	0.5532	0.2214**	-0.5413	0.3750
Edujob_2	Requirement for current job: higher general educ.	0.0160	0.2357	-0.3736	0.2366	-0.6851	0.4380
Edujob_3	Requirement for current job: vocational education	0.1384	0.1142	0.1129	0.1033	-0.4643	0.2115**
Edujob_4	Requirement for current job: preparatory scientific educ.	-0.2572	0.3070	-0.0304	0.3906	-0.7840	0.4364*
Edujob_5	Requirement for current job: HBO	0.0131	0.0758	-0.0519	0.0655	-0.3471	0.1195***
Sector_1	Sector of current job: agriculture/fishery	-0.1352	0.2513	-0.0054	0.2091	0.2970	0.3768
Sector_2	Sector of current job: industrial	-0.0605	0.0991	-0.1793	0.0905**	0.2672	0.1726
Sector_3	Sector of current job: energy	0.3638	0.2302	-0.1627	0.2361	-1.0771	0.4548**
Sector_4	Sector of current job: construciton	0.2093	0.1248*	0.0037	0.1158	0.1496	0.1761
Sector_5	Sector of current job: wholesale	-0.0274	0.1720	-0.1336	0.1872	0.0133	0.3844
Sector_6	Sector of current job: retail	0.0507	0.1582	-0.2676	0.1599*	0.0159	0.3235
Sector_7	Sector of current job: catering industry	0.2217	0.2009	0.0556	0.2006	0.4868	0.3721
Sector_8	Sector of current job: transport	-0.0974	0.1415	-0.4471	0.1495***	-0.0687	0.3079

Dependent variable		1=planned retirement age 60 or above	0=other	1=planned retirement age is 65 or above	0=other	1=planned retirement age is 67or above	0=other
Sector_9	Sector of current job: financial institutions	0.0733	0.1064	-0.1819	0.1025*	-0.0661	0.1799
Sector_11	Sector of current job: government & public services	0.1949	0.0999*	0.0030	0.0858	0.4563	0.1518***
Sector_12	Sector of current job: education	0.1953	0.1030*	0.1700	0.0925*	0.1139	0.1509
Sector_13	Sector of current job: health care	0.1539	0.0983	0.1113	0.0890	0.0154	0.1694
Sector_14	Sector of current job: culture, sports & recreation	0.4725	0.1603***	0.0795	0.1362	0.1317	0.2058
Sector_15	Sector of current job: other, none of the above	-0.0104	0.1752	0.0513	0.1666	0.1205	0.2384
Hours_work	Hours of contractual work in current job	-0.0057	0.0049	-0.0103	0.0042**	-0.0268	0.0076***
Wage	Hourly wage in current job	-0.0097	0.0060	-0.0301	0.0051***	-0.0466	0.0099***
Phd	Dummy for current job being a PhD candidate	0.6347	0.1578***	0.2690	0.1151**	0.1838	0.1764
_cons		-366.0354	38.7398***	-371.7553	34.0004***	-271.2925	65.8831***
No. of observations		20897		20897		20897	
Log likelihood		-10731.734		-12374.5		-4214.62	
Pseudo R2		0.0452		0.0502		0.1587	

Notes to table:

1 * Significant at 10% ** Significant at 5% *** Significant at 1%.