DNB Working Paper

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No. 492 / December 2015

DeNederlandscheBank

EUROSYSTEEM

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

Working Paper No. 492

December 2015

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What drives public acceptance of reforms? Longitudinal evidence from the run-up of the increase of the Dutch retirement age [*]

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December 2015

Abstract

Governments often find it hard to pursue economic reforms, even if they will eventually benefit a majority of voters. The literature is inconclusive about the drivers of public acceptance of reforms. While some scholars stress the role of economic interests, dividing the young and the old in the case of pay-as-you-go pensions, others stress the role of poor information or ideology. This paper attempts to disentangle these various factors by focusing on a successful recent reform trajectory: the 2012 increase of the Dutch statutory retirement age from 65 to 67 (and increasing with life expectancy thereafter). We exploit a unique longitudinal dataset on attitudes of Dutch households on pension reform in the 2003-2013 period. Our findings offer various new insights. First, we find that education, occupational status and psychological traits are the most systematic drivers of acceptance of reform, while age has only a limited impact. Second, and importantly, we find that year effects are the main drivers of respondents' acceptance of reform. We interpret the pattern of the year effects as evidence of a collective learning process where households gradually update their expectations and reform preferences to new information and communication.

Keywords*:* pension reform; political economy; public opinion; information.
JEL classifications: D72, D83, H55, P16.

[*] Email address: j.parlevliet@dnb.nl. The author wishes to thank Massimo Giuliodori, Jakob de Haan, Diederik Dicou, Maarten van Rooij, Jos Jansen, Barbara Vis and seminar participants at DNB, the European Department at IMF and the MInt group at the University of Amsterdam for useful comments and advice, and to Kees Goudzwaard and Lans Bovenberg for sharing their experiences of the AOW reform process. The views expressed are the author's and do not necessarily reflect official positions of DNB.

1. Introduction

Most economists and policymakers agree that European countries have much to gain from structural reforms that support potential output, strengthen public finances and facilitate resilience to shocks (see e.g. Barkbu *et al.* 2012; ECB, 2015; OECD, 2015a; Thimann, 2015). At the same time, the reform process in European countries has been slow and uneven. Two broad sets of explanations have been put forward to explain slow economic reform progress. A first broad view points at distributional conflicts between different socio-political groups with conflicting interests. Such conflicts can take time to be resolved, for instance because it can pay off to out-wait the other party ('war of attrition', see e.g. Alesina *et al.*, 2006). By the same token, reforms can be blocked due to opposition by powerful groups that have much to lose from these reforms (Olsen, 1965; Cremer & Pestieau, 2000; Sinn & Uebelmesser, 2002). A second broad view stresses that resistance to reforms is in fact rather broad-based.[2] Welfare programs tend to be rather popular (Brooks and Manza, 2006), especially when it comes to universal programs such as pensions and health care (Petersen et al, 2011;Vis, 2015). The public may often not appreciate well enough that reforms are necessary (Boeri *et al.*, 2001; 2002; Blinder & Krueger, 2004; Fornero, 2015). Additionally, fundamental beliefs and psychological traits may drive opposition to reform (e.g. Van Oorschot et al. 2012; Scheubel *et al.*, 2013; Kouba & Pitlik, 2014). In this context, reforms can be highly unpopular with the public at large and governments may be reluctant to propose them due to expected electoral risks. In the alleged words of former eurogroup president Juncker: "*We all know what to do but we don't know how to be re-elected once we have done it*" (The Economist 2007, quoted in Buti *et al.*, 2008). In between these views, Fernandez and Rodrik (1991) argue that even when a majority of voters would benefit from reform, the public will prefer the status quo when the distribution of these gains cannot be identified *ex ante*. Of course, the same can also happen when gains can be identified voters are simply unaware.

These contrasting views are also relevant when it comes to political economy of pay-as-you-go (PAYG) pension reform. PAYG pensions are paid from contributions of the current workforce. Due to rising old-age dependency rates, their sustainability has come under increasing pressure. Given that pensions are typically the single largest item on governments' budgets, their reform has been on the political agenda for quite some time and is likely to remain so for some time to come (EC 2015; OECD 2015b). Indeed, reforming pensions has proven a difficult task for policymakers (Bonoli & Palier, 2007; Arza & Kohli, 2008; OECD 2009). Various explanations have been put forward. On the one hand, a large strand of literature focuses on conflicting interests in the reform of PAYG pensions,

[2] This is also where most of the political science literature departs from. Most importantly, the 'new politics' approach initiated by Pierson (1996) posits that the politics of retrenchment of welfare state programs differs fundamentally from the politics of welfare state expansion. When welfare state programs are broadly cherished, in the latter case politicians can 'claim credit' while retrenchment is often considered electorally risky and politicians have to rely on 'blame avoidance' strategies to persuade the public. Vis (2015) provides a recent overview of the blame avoidance literature.

principally along the lines of age (for a review of this literature, see Galasso and Profeta, 2002). Since older voters stand to lose most from smaller PAYG transfers and a raise in the retirement age, they will lobby to protect the status quo. Or, as older voters grow in numbers, they can simply block pension reforms through majority voting (e.g. Sinn & Uebelmesser, 2002). On the other hand, other authors stress the poor public understanding of pension issues (see e.g. Boeri *et al.*, 2001, 2002; Blinder & Krueger, 2004; Boeri & Tabellini, 2012; Fornero, 2015) and fundamental resistance to pension reform (Scheubel *et al.*, 2013). In this case, also voters who will eventually gain from PAYG reform – e.g. by lower contributions – may resist them (Pitlik *et al.*, 2014).

This paper aims to improve our understanding of the reform process by tracing households' attitudes in the run-up of an important recent Dutch reform. In 2012 the Dutch government decided to raise the statutory retirement age from 65 in small steps to 67 in 2023, increasing with life expectancy thereafter. The measure had been anticipated already from the start of the public pay-as-you-go (PAYG) scheme in 1957. Due to demographic shifts, over the years contributions had to be gradually increased. In the late 1990s they were capped as a further rise was considered too damaging for employment growth, while the deficit was funded from the general budget. To strengthen the sustainability of the scheme and to support long-term employment in general, in the 1980s and 1990s various committees had stressed the need for raising the retirement age. However, this measure proved very controversial and virtually no political party advocated the measure until the late 2000s. Building on a longitudinal dataset we can analyse both expectations and preferences of households towards raising the retirement age over the 2003-2013 period.

We make several contributions to the literature. First, given information on a large set of individual characteristics and a large number of observations (over 12,000) we can systematically assess the (relative) importance of various covariates that have been put forward in the literature, such as age, employment status, income, demographic factors, education and more fundamental psychological traits. Secondly, the time dimension of our data is unique and enables us to trace preferences for reform over a time span of ten years in the run-up of an actual reform. As it turns out, this time dimension plays a critical role.

Our most important findings can be summarised as follows. First, of the individual covariates we find that education, psychological traits and employment status are the most comprehensive drivers of acceptance of reform. On the other hand, despite diverging interests of young and old respondents, age explains only a minor share of the variation in our data. We also do not find a significant role for income, even though PAYG schemes entail a fair share of redistribution.

Secondly, we find that the year effects in our regression are dominant in driving respondents' acceptance of the reform. We interpret the pattern of the year effects as evidence of a collective learning process where households gradually update their expectations and preferences to new

information and political communication. Already in the years 2005-2007, when economic conditions and public finances were still benign, support for raising the retirement age grew. We attribute this to reports on the costs of ageing and public discussions on the closure of early retirement schemes. When these discussions halted in the course of 2007 and 2008, support for reform somewhat dropped. In early 2009, after the crisis set in, the government proposed to raise the retirement age as part of a long-term consolidation package and some years of political discussions followed. In these years expectations and preferences gradually got more favourable to working longer. Inspection of the year effects by subgroups confirms that this gradually increasing support was broad-based. These findings suggest that distributional clashes were not at the heart of the observed resistance to raising the retirement age. This is interesting information from a policy perspective, as the most important challenge for pension reforms is then to convince the public at large, rather than to break opposition of particular groups.

The next section presents an overview of what factors the literature has found to drive public acceptance of reform, focusing on PAYG pensions. Section 3 offers a description of the Dutch pension system and the most important phases in the reform process, while Section 4 describes our data. Section 5 presents and discusses the results of our baseline regression models. Given the large role of time, Section 6 will inspect the coefficients of our year dummies, qualitatively linking them to key events in the reform process. After several robustness checks in Section 7, Section 8 concludes.

2. Literature on the political economy of (pension) reform

What does the theoretical and empirical literature have to say on the public acceptance of reforms, and of PAYG pensions in particular? While we are not aware of many studies on support for raising the retirement age specifically (except Van Els *et al.*, 2003), there is an extensive literature on reforms to reduce the size of PAYG transfers (sometimes accompanied by an increase of private savings). Of course, when benefits are kept unchanged, postponing the retirement age will also reduce the size of PAYG transfers. Below we will in turn discuss the role of age and other economic factors (income and employment status), demography, education, information, ideology and the political process itself.

Age plays the predominant role in political economy models on the reform of PAYG pensions (for a review, see Galasso and Profeta, 2002). Unlike funded schemes, in PAYG systems workers finance the pensions of the old. While the young pay for the benefits of current retirees, they at best get an implicit guarantee that future generations will do the same. In the case of demographic and other pressures on the PAYG scheme, young workers might be less willing to support a generous scheme that they themselves might not benefit from, and are predicted to favour lower benefits or raising the retirement age. However, as the old grow in number due to population ageing, they can block reforms by majority voting (e.g. Sinn & Uebelmesser, 2002) or by lobbying activities (Mulligan & Sala-i-

Martin, 1999). On the basis of surveys among Italian, Spanish, French and German respondents, Boeri *et al.* (2001, 2002, 2012) report that the young are more keen to make the PAYG pensions less generous, although the evidence is not always straightforward (Blinder & Krueger, 2004; Eurobarometer, 2012). Furthermore, on the basis of a 2003 Dutch survey, Van Els *et al.* (2003) find that support to raise the retirement age was very low and that age had no significant impact. At the same time, younger respondents were less likely to favour raising pension contributions and more likely to support lower pension benefits. Our data builds on the same panel but tracks attitudes over ten consecutive years instead of one (using a slightly differently phrased question). Moreover, on the basis of monthly data from the so-called Pensionbarometer, Bisonette et al. (2009) report that in the 2006-9 period younger people tend to expect more often that the retirement age will be raised and benefits will be lower (these results are also reported in Van der Wiel, 2009). Furthermore, Hollanders & Koster (2011) do not find empirical evidence that countries with older median voters have more generous pension benefits.

Of course, age is only one factor that determines one's economic stake in PAYG systems and *income* and *employment status* may also play a role. As to the first, flat-rate PAYG systems entail a substantial within-cohort redistribution, also in the Netherlands (Bonenkamp & Ter Reele, 2013). Higher-income respondents therefore have to gain from lower transfers (Tabellini, 2000). Similarly, not all working-aged individuals pay pension contributions. People working in the household might be less concerned with contributions, and more with their own pension income at formal retirement. In addition, people receiving disability or other benefits, might be most concerned with the willingness of workers to maintain contributions and might in fact be in favour of reforms to keep the pension system sustainable. Empirical evidence suggests that employment status indeed plays a significant role (e.g. Boeri *et al.* 2001, 2002, 2012; Blinder & Krueger, 2004). Boeri *et al.* (2001, 2002), however, find mixed results for the role of income.

Demographic factors can also shape preferences for pension reforms as decisions on retirement are often made in the family context (Leroux *et al.*, 2011; Vermeer *et al.*, 2014). Indeed, empirical studies have confirmed that married respondents are less keen on pension reform (see e.g. De Grip *et al.*, 2011; Boeri & Tabellini, 2012). Furthermore, empirical studies have found that women are less likely to favour pension reforms that reduce public transfers (Boeri *et al.*, 2002; Blinder & Krueger, 2004; Boeri & Tabellini, 2012; Scheubel *et al.*, 2013). Having children or grandchildren might also matter. Scheubel *et al.* (2013) find that respondents with children are significantly less likely to support pension reform in Germany. At the same time, Goerres and Tepe (2010) find that older respondents are more likely to support public child-care provision – which they will pay for, but not use – if they are in close contact with their adult children. Likewise, people with grandchildren could be more likely to value future sustainability of pension arrangements. Finally, support for pension reform may also

depend on respondents' health (i.e. one's ability to continue work) (McGarry 2002; Scheubel *et al.* 2013).

Empirical studies also typically include *education* as a factor shaping preferences for pension reform. Boeri *et al.* (2001) find that respondents with only compulsory education are significantly more likely to favour generous PAYG transfers, also when controlling for income, while university graduates do not differ from high school educated ones. Boeri *et al.* (2002) find that higher educated individuals are more likely to list one or more reform options, but are not significantly in favour of a smaller PAYG pillar. Of course, education might influence preferences for pension reform through various channels. Higher educated individuals might enjoy higher *job satisfaction*, and as such might attach less importance to early retirement. Indeed, based on survey data from Germany Scheubel *et al.* (2013) find that respondents who are more satisfied with their job, are also more optimistic about their future work ability.

Another factor correlated with education is *knowledge* about the functioning of the pension system (Blinder & Krueger, 2004; Boeri & Tabellini, 2012). Indeed, a growing literature has highlighted the importance of knowledge and information provision in driving public opinion. Boeri *et al*. (2001) find that most respondents underestimate the costs of public pensions, sometimes quite dramatically so. For instance, a third of the Spanish respondents believed the scheme was running a surplus, while in fact the government subsidised a third of the scheme (see also Van Els *et al.*, 2003 for the Netherlands). Likewise, and drawing on her own experiences in office, Fornero (2015) argues that lack of economic and financial literacy is one of the key factors impeding pension reforms in Italy. Using a controlled experiment where part of the respondents get neutral information on the pension scheme, Boeri and Tabellini (2012) find that individuals are more willing to accept reforms when they receive neutral information on the pension scheme.

How then does the public in practice learn about the need for reforms? On the basis of a Dutch monthly survey running from May 2006 to November 2008, Van der Wiel (2009) studies the relationship between news and expectations on changes to the statutory retirement age. She finds that some groups adapt their expectations to media attention, but others don't. To reconcile this, she hypothesises that newspaper articles might contain a lot of 'old news' that especially higher educated individuals do not respond to. Indeed, *news per se* will not make readers more informed (Blinder & Krueger, 2004). Theoretical and empirical studies suggest that 'consumers of news' may be inclined to read news that confirms their beliefs and newspapers may slant towards readers' positions (Mullainathan & Shleifer, 2005; Gerber *et al.*, 2007).

This also brings us to the role of *ideology*, a set of beliefs both capturing expectations on how the world works and normative positions. Empirical studies on attitudes towards reform often include a self-reported measure of ideology on the left-right scale. Boeri *et al.* (2001, 2002) find a systematic

role for ideology in driving preferences for pension reform. On the basis of both US and the World Values Survey, Alesina and Giuliano (2009) look at the extent to which respondents feel they can determine their own life. They find that respondents who believe luck is a more important driver of social success than hard work, have a stronger preference for redistribution. These results are corroborated by Kouba & Pitlik (2014). Furthermore, on the basis of data from the European Value Survey, Van Oorschot *et al.* (2012) find that ideas play a much stronger role in shaping attitudes on the welfare state than their economic interests. Using a survey among US citizens, Blinder and Krueger (2004) also conclude that ideology is the main factor shaping preferences on issues such as the government budget, the minimum wage and health insurance; economic interests rank last and knowledge in the middle.

Furthermore, an important question is whether policymakers advocating reforms can support the public's acceptance of reform. In the more stylized median voter models politicians merely mirror the preferences of their constituencies in order to maximize their votes. More realistically, political leaders can pursue policies that are unpopular with their own electorate (see e.g. Pierson, 1996; Cukierman & Tommasi, 1998; Bonoli & Palier, 2007). For one thing, this can be the case when political leaders have better information on the urgency of the problem than the electorate. Empirically, most scholars have relied on qualitative case studies. Overall, such studies see a significant role for politicians in overcoming resistance to reforms, e.g. by facilitating political exchanges and careful framing of reform proposals (Arza & Kohli, 2008).[3] Furthermore, by analysing 20 case studies on more and less successful reforms, OECD (2009) hints at the importance of effective communication, solid research by an independent, non-partisan institution, appropriate timing and a sufficient gestation period. Finally, analysing four European cases of PAYG reform, Bonoli & Palier (2005) find that sequencing matters, i.e. various stages in the reform process tend to reinforce one another.

Last, the literature has also investigated to what extent an economic crisis helps or hinders the adoption of reforms. Theoretically, on the one hand, in crisis times voters may be more keen on social protection in the first place (Vis *et al*., 2011). Furthermore, an economic crisis will make structural reform more difficult when there is less budgetary scope to compensate losers of the reform (Beetsma & Ribeiro, 2008). On the other hand, politicians can use a budgetary crisis to *avoid blame* for implementing unpopular measures (see e.g. Vis, 2015). Furthermore, when voters punish politicians for an economic downturn ('economic voting'), these parties do not count on re-election anyway and maybe more likely to go ahead with unpopular reforms (Hollanders & Vis, 2011). Empirically, most

[3] Likewise, it is important that politicians can persuade the public that reforms are really necessary. This can be enhanced when the reforms are proposed by parties that are least sympathetic to them (e.g. left-wing regarding marked-oriented reforms) (Cukierman & Tommasi, 1998). Recent studies do not find evidence of this so-called "Nixon-goes-to-China-effect" for welfare state retrenchment (see Vis (2015) for a review).

studies confirmed that crises facilitate the adoption of reforms (Pitlik & Wirth, 2003; Duval & Elmeskov, 2005; Agnello *et al.* 2015).

Our dataset allows us to complement these strands of literature as follows. First, given information on a large set of individual characteristics and a large number of observations (over 12,000) we can systematically disentangle the role of various covariates mentioned above. We will report regression coefficients and their significance and will also assess how much explanatory power the different sets of factors actually have. Secondly, and importantly, we can trace the development of household preferences for reform over a time span of ten years in the run-up of an actual reform (and eleven years in the case of expectations). Our data start at the moment that fiscal subsidies for early retirement schemes were being phased out, and trace several years of political discussions on the raise of the retirement age up until its implementation in 2012. We will see this time dimension plays a critical role, and although we cannot make bold statements on the causal impact of particular events, these time effects give us some suggestions on decisive moments in the public acceptance of reforms. Before describing the data, the next section briefly reviews the Dutch pension system and its recent reforms.

3. The Dutch pension system and its main reforms

The Netherlands has a three-tiered pension system. All residents are entitled to a flat-rate pension (AOW), financed on a pay-as-you go (PAYG) basis and in net terms worth 70 per cent of the minimum monthly wage for a single person.[4] In addition, almost 90 per cent of all workers are covered by a funded earnings-related occupational pension plan (second pillar).[5] In addition, workers and the self-employed can voluntarily take up a pension insurance (third pillar). The government supports second and third pillar pension saving by mandating participation in sector schemes.[6] In addition, the government provides generous fiscal subsidies.[7]

At the start of the AOW in 1957, the statutory retirement age was set at 65. The retirement age of the first and second pillars are closely linked as pension funds take the AOW benefits into account in their pension ambition. It is important to note that until the early 2000s most workers left the workforce earlier than at the statutory retirement age (Chart 1). As in many other European countries,

[4] In 2015 the net monthly payment was just over 1,000 euro. Couples together receive 100% of the minimum monthly wage.

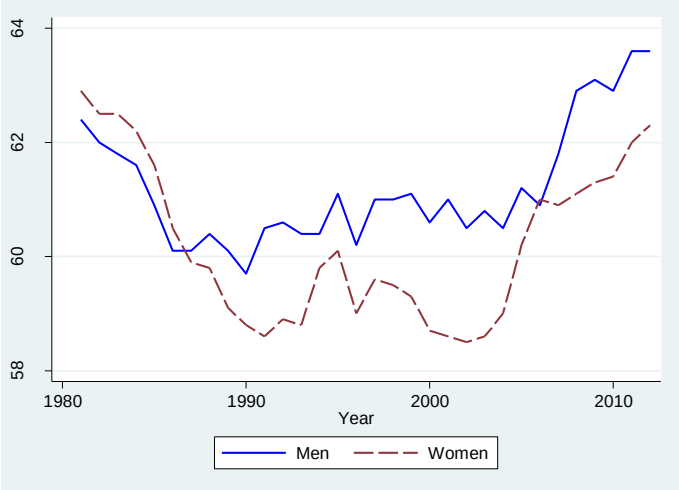
[5] The majority takes part in a sector fund, others in a fund organised by their employer or a scheme employers contracted to an insurance company.

[6] Companies in sectors without a pension fund are not obliged to set up a fund. However, when they offer a pension plan to one of their employees, they are obliged to offer it to all employees.

[7] Contributions are paid from the gross wage up to a certain maximum ('Witteveenkader') and accrued pension savings are exempted from wealth taxation. Taxes are levied only on the benefits received during retirement.

these early retirement schemes were introduced with the intention of releasing jobs for the young in response to high unemployment in the 1980s, although ex post studies show they have not been effective in doing so (Gruber & Wise, 2010).

Chart 1 Average effective retirement age, 1980-2012
Five-year average of (net) withdrawals from the labour market



Source: OECD.

Furthermore, demography has put increasing pressure on PAYG. Due to demographic shifts and increases in life expectancy, the old-age dependency rate rose from just below 16 per cent in 1957 to 20 per cent in 1985, 25 per cent in 2010 and 30 per cent in 2015. These demographic shifts were not unanticipated and already at the time that the AOW was created the finance minister noted "should the burden become too heavy in the future, then relief is possible by raising the statutory age of retirement, an option that well suits the increase of the average age and a better physical condition of the elderly".[8] Also in the mid-1980s a high-level committee advised raising the retirement age, be it by 2011, when the baby boom generation would reach the age of 65 (Drees Committee, 1987). In 1993, the Scientific Council for Government Policy (WRR) echoed this advice to gradually raise the statutory age of retirement, while at the same time increasing the participation of workers below 65 (WRR, 1993). However, political parties were not keen on proposing changes to the AOW, possibly due to large losses in the 1994 elections of the Christian-Democratic party which were attributed to its proposed freeze of AOW benefits. Instead, even when in the late 1990s the rising AOW-premiums were considered too damaging for employment growth, political parties did not propose to raise the retirement age. Instead, pension contributions were maximized and the differential was agreed to be paid from the general budget.

[8] Own translation of Explanatory Memorandum, Kamerstukken II 1954-1955, 4009, No. 3, chapter 8.

In the 2000s raising the retirement age got renewed attention. Our data allow us to zoom in to household attitudes in the 2003-2013 period. To appreciate the reform process, some features of the Dutch political processes are worth mentioning. The Netherlands has a multi-party democratic system where coalition governments generally consist of two or three parties. In the period under study (2003-2013) the political system was relatively unstable with coalition governments in office for slightly over 2 years (instead of four) (see Table 1). In addition, there is an important role for trade unions and employer organizations which are usually consulted by the government on major socio-economic reforms with a link to the employment contract (including pensions). The government is obliged to give a formal appreciation of the proposals made by the tripartite body of trade unions, employer organizations and independent experts, the Social and Economic Council (SER). This also goes for reports of other important advisory bodies, such as the WRR. In addition, there is an important role for the Bureau for Economic Policy Analysis (CPB), which often analyses major economic and budgetary effects of reforms under discussion. Finally, it is worth noting that in the period under study (2004-2013) the political system was relatively unstable with coalition governments in office for slightly over 2 years (instead of four) (see Table 1).

Table 1 Coalition governments 2002-current

Name	Parties	Start	Resigned	Days
Balkenende I	CDA, LPF, VVD	22-07-02	16-10-02	309
Balkenende II	CDA, VVD, D66	27-05-03	30-06-06	1137
Balkenende III	CDA, VVD	7-07-06	21-11-06	230
Balkenende IV	CDA, PvdA,ChristenUnie	22-02-07	20-02-10	1330
Rutte I	VVD, CDA	14-10-10	23-04-12	753
Rutte II	VVD, PvdA	5-11-12		

Source: nl.wikipedia.org

The increase of the retirement age was first explicitly proposed by the government in 2009 but only formalised in summer 2012, when a law was adopted to gradually raise the statutory pension age from 65 to 66 in 2019 and 67 in 2023 and increasing with life expectancy thereafter. Several key events in the run-up to these milestones are worth mentioning. In 2006, well before the economic crisis, a number of reports was issued on the budgetary costs of population ageing.[9] Several of them hinted at raising the retirement age. Furthermore, in November 2007 the minister of Social Affairs invited a high-level committee to propose measures to strengthen labour participation (Bakker Committee). In

[9] These reports are by the Bureau for Economic Policy Analysis (March), the Budgeting Framework Commission (June), the government's budget for 2007 (September) and the Scientific Council for Government policy (end September).

June 2008 this committee proposed, among other things, to gradually raise the retirement age from 65 in 2016 to 67 in 2040. In its official response later that month, the responsible minister concurred that a rise of the retirement age "seems inevitable" but that the government stance was to "avoid this inevitability", e.g. by raising labour participation up till the age of 65. In spring 2009 the government did propose to raise the retirement age to 67 as part of a reform package to weather the economic crisis, but it took some time before the measure was finally agreed upon. After heated discussions and protests by the main trade union FNV, social partners were invited to come up with an alternative that would realise the same budgetary gains (€4 billion). Partly due to the large opposition of trade unions' constituencies to raise the retirement age, they failed to deliver by their deadline of October 1st. A few days later the government proposed to raise the retirement age to 66 in 2020 and to 67 in 2025. Early 2010, however, the coalition government fell and again social partners started to negotiate in anticipation of new government plans. In early June of that year, several days before the elections, they reached an agreement to raise the retirement age in one step to 66 in 2020 and – if needed – to 67 in 2025 (on the condition of some exemptions). The new minority government of VVD and CDA supported this plan, even though they relied on support of a populist party (PVV) that had strongly opposed the reform before the elections. The final act of the reform process started in spring 2012, when in the context of an excessive deficit procedure the coalition government had to come up with a consolidation package worth €6 billion. With the support of two other parties, the coalition government proposed to increase the retirement age in small steps already in 2013. It is this 'Spring Agreement' that was finally implemented.[10]

A previous series of reforms is also worth mentioning. Given the high incidence of early retirement, a preceding step was to end the fiscal subsidies on such schemes. In the early 2000s the government first suggested to phase out fiscal subsidies, while starting negotiations with the social partners. After massive trade union protests in October 2004 the government agreed to use lenient transition periods, exempting many of the older workers – key constituencies – from the reform.

Chart 2 below summarises some of the most heated debates in the Dutch pension reform process from the public's perspective, highlighting google search activity on some key related search terms. A first peak takes place in summer 2005, when following the phasing out of fiscal subsidies for early retirement schemes, trade unions and the government reached an agreement on a transition scheme for civil servants. Furthermore, in September 2006 search activity on 'ageing' reaches a peak, just after several reports have been published on the impact on collective arrangements (see footnote 9). Furthermore, search activity on the statutory retirement peaks in October 2009, after social partners failed to propose an alternative to increasing the retirement age. Finally, searches after 'retirement age'

[10] In fact, in May 2015 the government agreed to further accelerate the rise of the pension age. This happened in relative peace.

peak in November 2012, just after the start of an awareness campaign on the start of the new regime in 2013.

Chart 2 Monthly google search activity, 2004-2013

Source: Google trends. Note: Each line shows the relative search activity on the respective term over time. A peak of 100 indicates when in the 2004-2013 period the term was used most.

4. Data

DNB Household Survey

We use data from the DNB Household survey, a panel run by CentERdata at Tilburg University (which also administered the Pensionbarometer described in Section 2). The panel started in 1993 and includes approximately 2,000 households which are representative of the Dutch population, of whom one or more household members take part. A majority of respondents takes part in the panel year after year; in case of attrition new participants with similar characteristics are recruited so as to maintain a representative sample of the Dutch population. The list of questions is extensive, covering detailed information on occupational status, education, earnings, wealth, pension entitlements, accommodation, health and psychological concepts, divided in various modules. The various modules are spread over the year and the response rate to the different modules somewhat differs (see Teppa & Vis, 2012). This means that using covariates from other modules can lead to missing values. Among others, the panel has been used extensively to study financial literacy and financial market and savings behaviour (see e.g. Guiso *et al.* 2008; Alessie *et al.* 2011; Alessie & Mastrogiacomo, 2014).

Dependent variables

The main question of our interest concerns respondents' preferences on the reform of the statutory pension scheme (AOW). This question has been posed since 2004. To be precise, respondents are asked: "*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?*". There are three potential answers: i) "*a lower general old-age pension at the age of 65*", ii) "*an increase of the old-age pension premium for people working*", and iii) "*increase the age by two years (from 65 to 67 years of age) on which one will receive the general old-age pension*".[11]

When respondents list option iii) as their preferred option, we take this as support for raising the retirement age, the reform this paper studies.[12] In our baseline regressions, we employ a probit regression where the dependent variable is a dummy taking the value of 1 in case respondents list this option. Furthermore, respondents can also list a *second* preferred option. In Section 7 we compare our baseline dummy regression with an ordered logit regression in which we estimate whether raising the retirement age was respondents first, second or last choice.

In addition, we will also discuss respondents' expected retirement age (available from 2003). This information can help complement our understanding of preferences for reform. For instance, if young respondents expect to retire early, they might not be convinced of the need for AOW reform in the first place. The exact wording of the first question is: "*At what age do you expect to retire, or make use of the early retirement arrangement?*". Note that this expected retirement age is not necessarily equal to the statutory retirement age (AOW). First, especially until the mid-2000s respondents could take part in an early retirement scheme. Furthermore, households can use private savings – including a second or third pillar pension – to retire earlier. These savings have to be substantial, however, to allow for a material advance in the time of retirement. Third, of course some households may want to keep working beyond the statutory age of retirement. Overall, however, we think that especially after the phasing out of early retirement schemes, for most households the expected retirement age is strongly influenced by their expectations of the statutory retirement age. An exception are the older respondents, as most of the reform proposals featured transition periods that would leave older workers largely unaffected (see Section 3).

[11] From 2012 onwards – when the government had decided to raise the statutory retirement age – the last option was asked without reference to 65 and 67 and in 2013 in the introduction to the question reference is made to the recent rise of the statutory retirement age.

[12] Other than the other two options – higher contributions and lower benefits – an increase of the retirement age concerns a structural parameter change that will permanently increase labour supply and potential output. It was also a concrete policy proposal being discussed at the time (while increasing contributions represents the default and passive policy action).

We thus have data on 10 years of preferences for reform of the public pension scheme and 11 years of respondents' expected retirement age, covering both the period before and just after the reform took place. We know when the survey was performed (most took place in April/May). Table 2 gives the summary statistics of our core sample (number of observations, mean, standard deviation, minimum and maximum values). The first variable, *preference_aowage_up*, is a dummy taking the value of 1 when the respondent lists raising the retirement age as first preferred option for AOW reform. On average this concerns 29 per cent of the observations. As to the second variable, *expected_retirementage*, the sample is smaller as this question is not posed to all respondents (e.g. those in retirement). In addition, some respondents indicate the question is not applicable to them or report they don't know. Given that this partial response is a particular problem for respondents who are not active on the labour market, we focus on respondents who are still active in the labour market or who still have to enter the labour market. Table A.2 in the Appendix compares characteristics of this sample with the total sample (also omitting respondents not active on the labour market) – they are largely comparable. Furthermore note that we also reported missing values in some rare cases where the expected retirement age was below 40.[13] Table 2 shows that of those 9,278 respondents listing an expected age of retirement, the average is 63.5.

Covariates

Table 2 also lists the summary statistics of all covariates used, ordered by economic factors, demographic factors, education and psychological traits (see Table A.1. in the Appendix for a description of all variables). Before moving to the individual covariates, note that we have missing values for some of them (gross income, financial wealth, health and the psychological traits). These missing values come from other modules of the questionnaire that respondents have not answered. Where possible, we have imputed missing values by the mean value of the observations of the respondent from previous and following years that he or she took part. This particularly applies to the psychological traits questionnaire, which was not included in all years.[14] While at most 8 per cent of values remain missing for one variable (in the case of *locus of control*), with all these missing values combined in our full model we end up with a sample of 87 per cent (in the case of the expected retirement age) and 89 per cent (in the case of preferences for AOW reform) of the total sample. In Section 7 we test whether results are robust to our imputation method and the decrease of the sample due to merging the various modules.

[13] This concerns 10 cases and doing so does not influence any of our results.

[14] In 2003, none of the psychological concepts features in the questionnaire. Furthermore, locus of control is not included in the years 2004, 2008, 2010 and 2012. Finally, starting from 2010, the module on patience is only asked to respondents who have not yet answered it.

Under economic factors, we first report *age*, given the large effect of one's age on respondents' economic interests in PAYG reform and its prominent role in political economy models of PAYG reform. The average age of respondents in the entire sample is just over 46 and ranges from 16 (the lower threshold for taking part in the survey) to 65. In our regression we decided to include 4 age categories. Furthermore, we have detailed information on respondents' *occupational status*. We group respondents in five broad categories: employee, self-employed, working in household, receiving pension, unemployment or disability benefits, and other respondents. Last, we have information respondent's *gross income* and *financial wealth*. Both add up to just over 30,000 euros a year, where wealth is clearly more dispersed than income (including towards negative values).

Table 2 Sample summary statistics, 2003-2013

	count	mean	s.d.	min	max
Dependent variables					
preference_aowage_up	13723	0.29	0.46	0	1
expected_retirementage	9278	63.51	3.78	40	98
Covariates					
age	14722	46.31	11.61	16	65
employee	14722	0.69	0.46	0	1
self_employed	14722	0.06	0.24	0	1
household	14722	0.09	0.29	0	1
benefits	14722	0.12	0.32	0	1
other	14722	0.04	0.20	0	1
grossincome (1,000 EUR)	14003	32.50	24.20	0	582.5
financial_wealth (1,000 EUR)	14259	30.90	83.23	-68.9	3702.1
female	14722	0.46	0.50	0	1
married	14722	0.64	0.48	0	1
child	14722	0.54	0.50	0	1
grandchild	14722	0.13	0.33	0	1
health	14322	3.90	0.67	1	5
university	14722	0.18	0.38	0	1
vocational_high	14722	0.29	0.45	0	1
vocational_intermediate	14722	0.21	0.41	0	1
preuniversity	14722	0.09	0.29	0	1
low	14722	0.23	0.42	0	1
riskaversion	13900	5.25	1.00	1.3	7
patience	14089	4.13	0.58	1.5	6.8
conscientiousness	14085	4.42	0.58	1.8	5.8
locus_of_control	13503	4.55	0.63	1.8	7
frequency	14722	3.51	2.54	1	11

Source: DHS, 2003-2013. Note: Table shows summary statistics for respondents who reported information preferences for AOW reform, of which a subset also was asked about their expected retirement age. In 2003 respondents were not yet asked about their preferences for AOW reform, but they were on the expected retirement age (999 observations).

As to demographic factors, the majority of our respondents are male, married, and have children, while 13 per cent of respondents also have grandchildren. Furthermore, respondents rate their health on average with 3.9 on a scale of 1 to 5. Regarding education (highest attended), 18 per cent of respondents have attended *university*, 29 per cent higher vocational training (*vocational_high*), 21 per cent have intermediate vocational training (*vocational_intermediate)*, 9 per cent pre-university training (higher-level secondary training) and 23 per cent at most special, primary or lower vocational training (*low*).

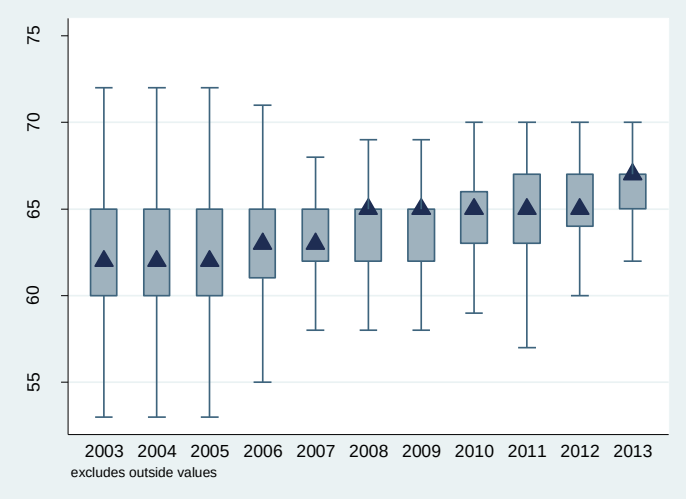
Furthermore, DHS includes respondents' scores on four personality traits (risk aversion, patience, conscientiousness and locus of control), which have been constructed and validated in psychological research. For all four concepts, respondents need to rate (on a 1 to 5 or 1 to 7 scale) to what extent they agree with several statements (sometimes in the reverse direction). Table A.3 in the Appendix lists the statements used to construct our indices. The measures in Table 2 report the average score on all questions/statements (reversing the reverse-coded items). *Risk aversion* has both the highest score and the highest dispersion. As to respondents' *patience*, the score is 4 and the dispersion is lower. *Conscientiousness* is one of the so-called 'Big Five' personality traits and measures to what extent individuals think of themselves as structured, having eye for details and keeping obligations. Fourth, *locus of control* measures the extent to which an individual believes he or she can influence economic outcomes on one's life, in contrast to luck or fate (as also studied by Alesina & Giuliano, 2009, see above).

The last row shows that respondents on average participated in 3.5 surveys ('frequency'), while some individuals even participated in the full period (11 years).[15] This feature of the data offers the unique possibility to track expectations and preferences of the same individuals over time. On the other hand, it is also possible that individuals who remain in the panel are socially more involved or are 'treated' by answering this question several times (leading, for instance, to increasing awareness of sustainability concerns). We will test for these possibilities in Section 7.

[15] There are other interesting covariates we considered to include, such as job satisfaction, financial literacy, housing wealth and debt. We decided not to include these as they would reduce the sample by a too substantial amount, sometimes by more than half, which significantly lowers our degrees of freedom and could possibly also result in nonrandom selection bias. In these smaller-scale regressions, we found that: i) (net) housing wealth gave similar results as financial wealth, ii) job satisfaction (which is not available for all years, and not for those not working) has a significantly positive effect on the expected age of retirement and support for raising the retirement age, and iii) financial literacy (only available in 2005) had a positive and significant impact on acceptance of raising the retirement age, but only when we do not include the personality traits. Indeed, correlation coefficients are substantial (from high to low: 0.26 with locus of control, 0.23 with patience, -0.19 with risk aversion and 0.07 with conscientiousness). This lends support to Fernandes *et al*. (2014) who stress that the often observed positive link between financial literacy and financial decisions is in fact driven by psychological factors, suggesting that financial education is not necessarily an effective tool to improve financial decision making of households.

Finally, a crucial dimension of our data is that we can trace households' expectations and preferences by year. Chart 3 shows how expectations of our respondents gradually shifted upward after 2005. Median values saw increases in spring 2006 (from 62 to 63), spring 2008 (from 63 to 65) and spring 2013 (to 67).

Chart 3 Expected age of retirement, 2003-2013



Note: the triangle of the above 'box plot' shows the median value. The box shows the values in the interquartile range of the distribution (i.e. from the 25th to the 75th percentile). The upper and lower markers represent the values of the 25th and 75th percentile minus/plus 1.5 times the value of the 25th – 75th range.

Turning to preferences, Chart 4 shows the first preferred option of respondents to ensure sustainability of the public pension scheme. The chart shows a gradual but marked change over the 2004-2013 period. In 2004 only a fifth of respondents preferred a higher retirement age as their first choice, in 2011 and 2012 this was well over 40 per cent. This increased support for raising the retirement age came especially at the expense of support for raising premiums; the support for lower benefits stayed remarkably constant at around 20 per cent. In 2013, when the statutory retirement age was raised, the support for (further) raising the retirement age dropped, although to a higher level than in 2004. Chart 5 also lists the support for raising the retirement age as second and last option. When also including the second preferred option, support for raising the retirement age increased from just over 40 per cent in 2004 to well over 70 per cent in 2012.

Table A.4 in the Appendix shows the mean values of all variables by year. Among others, it shows that the sample we use has decreased a bit in size each year and that up till 2012 the mean age gradually increased. In 2013, the average age dropped by several years, this is due to CentER oversampling younger households to correct for the ageing of the sample in the years before (almost 80 per cent of the 336 panel members that joined our sample in 2013 was below 35).

Chart 4 Preferences for AOW reform

% of respondents listing each option as first choice for AOW reform.

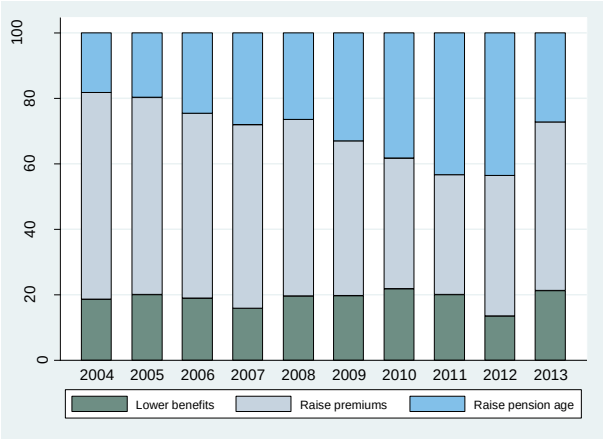
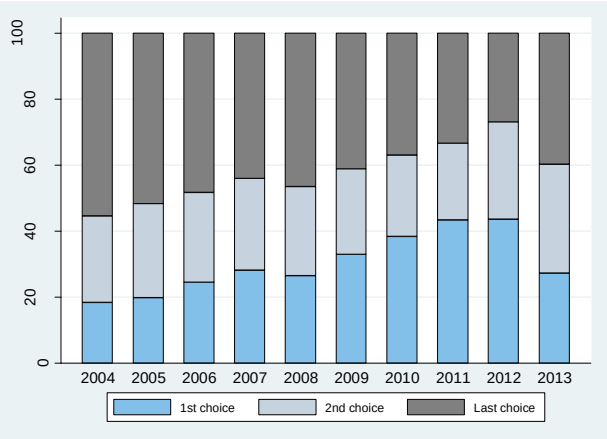


Chart 5 Support for raising the retirement age

% of respondents listing raising the retirement age as 1st, 2nd or last option.



5. What drives retirement expectations and preferences?

This section explores the impact of various covariates on both the expected retirement age and preferences for AOW reform. Below we will briefly discuss our specification and then discuss the outcomes per block of variables – economic, demographic, education and personality traits.

Specification

In what follows, we pool all observations of all respondents and years together. Hence, we exploit both variation between respondents and, where applicable, within respondents over time. In both regressions we use the same respondents' characteristics as covariates (except the dummies for working in the household and receiving benefits in case of expected retirement age). Given the time trend witnessed above, we include time dummies in all regressions. Furthermore, we cluster standard errors at the household level.[16] The expected retirement age is a continuous variable and is estimated by OLS. The preference for raising the statutory retirement age is measured on a binary scale (1=first preference for reform, 0=not first preference) and is estimated with a probit regression. For the probit regressions, we report marginal effects at the mean of the variable, so that we can interpret results as the percentage change resulting from a one unit change at the mean of in the covariate. In Section 7, we test whether results are robust to a fixed effects panel regression only including those individuals that take part in the survey for several years. We will also test whether results are robust to including the second preferred reform choice in an ordered logit regression.

[16] This assumes that expectations and preferences of respondents are not independent within the household due to e.g. common information, networks or ideology. Results are similar when we cluster standard errors at the individual level. When not clustering standard errors at the household or individual level, as expected standard errors are smaller and statistical significance levels are higher.

It is also worth mentioning some choices on the functional form of our regressors. First, we include age in dummy categories as age is not necessarily linearly related to expectations and preferences for reform. For the same reasons, we groups income and wealth in quartiles. Finally, in line with Salamanca Acosta (2015), we standardise the scores on the psychology traits and on self-reported health so that they have zero mean and a standard deviation of one.[17]

Furthermore, we can clearly expect some correlation between the covariates. Most correlations are low and of the over 200 pairwise correlations, we have only one correlation exceeding 0.5, the threshold often used as a rule of thumb for problems of multicollinearity. This correlation is between being married and having a child (0.81). Given this high correlation, we decide not to include the dummy for having a child (while we keep the dummy for being married and for having a grandchild). We test the stability of remaining coefficients by adding the various sets of covariates (age, occupational status, income/wealth, demographics, education and personality traits) one by one, in both directions. The results are reported in Tables A.5.1 and A5.2 (for the expected retirement age) and Tables A.6.1 and A6.2 (for preferences for AOW reform) in the Appendix. The tables show some cases where regression coefficients and their significance levels fluctuate due to inclusion of other covariates, while in most cases coefficients remain stable throughout (in the case of preferences for reform, notably the dummies for education, occupational status and the psychological traits).

Results

We now turn to our baseline regressions of respondents´ expected retirement age and support for raising the retirement age in which we include all our covariates (except *child* that we drop for multicollinearity as noted above). The results are reported in Table 3. We will discuss the results by cluster of variables. Coefficients for the time dummies are suppressed in Table 3, but will be discussed in more detail in the next section.

We start with the results for our *economic variables*. First, as discussed, in political economy models of PAYG reform, *age* plays a dominant role in driving economic interests and hence preferences for AOW reform. We let age enter the regression via dummies where respondents between 35 and 45 years act as reference category. Several things stand out. First, respondents below 35 are significantly more likely to expect to retire early than the reference group of the respondents aged from 35 to 45, suggesting that these younger respondents are probably naïve in their retirement expectations. On the other hand, there is no significant difference in the expected retirement age with those aged 45-55 and 55-65. The picture is different for preferences. Preferences do not differ among the youngest

[17] Note that we standardise variables by taking the mean and standard deviation *per year*. Although personality traits are typically assumed to be largely time-invariant, there is some evidence that they can change over time, particularly as regards risk aversion (see chapter 2 of Salamanca Acosta 2015).

respondents and the reference group (35 to 45), but those aged between 45 and 55 report significantly lower support for raising the retirement age than the younger respondents, in line with their economic interests. Interestingly, this does not hold for respondents aged 55 to 65. The relative indifference of this latter group to raising the retirement age can be explained by the fact that a significant share of them is already in early retirement and by the transition periods that featured in most of the concrete proposals for raising the retirement age (see Section 3).

The results furthermore show that *occupational status* matters for reform preferences (but not for expectations). It is employees (the reference group) who are most hostile to raising the retirement age, while the self-employed and respondents that receive benefits (for either disability or for retirement) are significantly more in favour of raising the retirement age. These effects are rather large (10 and 11 percentage points, respectively). Self-employed respondents might enjoy higher job satisfaction or might be particularly hostile to higher contributions. Respondents who receive benefits might worry over the benefit level of their pension and eroding support for pension contributions among the workforce. Finally, dummies for income and wealth quartiles do not yield significant results. An important exception are the respondents in the two highest wealth quartiles, who expect to retire significantly earlier than respondents in the quartile with the lowest wealth (including negative wealth).

Turning to *demographic factors*, Table 3 highlights that females expect to retire a year earlier than men. This can be due to women having older partners and planning to retire at the same time as their partners. Married respondents also expect to retire earlier, and are also significantly more hostile to raising the retirement age. Having grandchildren, however, significantly boosts support for raising the retirement age. This can indicate that respondents with grandchildren start to attach more importance to the sustainability of the pension scheme for future generations. Furthermore, healthier respondents expect to retire at a later age, and more often support raising the statutory retirement age.

Education matters both when it comes to respondents' expected retirement age and their support for AOW reform. As to the first, respondents who attended university or higher-vocational training expect to retire 9 and 7 months later. Furthermore, support for raising the retirement age is 11 percentage points higher among university graduates than the lowest-educated but not significantly higher or lower among other educational groups.

Table 3 Results baseline regression of retirement expectations and preferences for reform

	(1)		(2)	
	expected_retirementage		preference_aowage_up	
	OLS		Probit	
Economic factors				
Age (reference group: aged 35 to 45)				
below35	-0.48**	(0.23)	-0.01	(0.02)
age45to55	-0.19	(0.16)	-0.06***	(0.02)
age55to65	-0.21	(0.18)	-0.02	(0.02)
Employment status (reference group: employees)				
self_employed	0.35	(0.37)	0.10***	(0.03)
household			0.04	(0.03)
benefits			0.11***	(0.02)
other	-0.52	(0.37)	0.02	(0.03)
Income/wealth (reference group: Q1)				
incomeQ2	0.16	(0.37)	-0.01	(0.02)
incomeQ3	0.18	(0.37)	-0.01	(0.02)
incomeQ4	-0.36	(0.39)	-0.02	(0.03)
wealthQ2	-0.15	(0.19)	-0.02	(0.02)
wealthQ3	-0.41**	(0.19)	-0.02	(0.02)
wealthQ4	-0.77***	(0.19)	-0.03	(0.02)
Demographics				
female	-1.01***	(0.15)	-0.02	(0.01)
married	-0.73***	(0.16)	-0.03**	(0.02)
grandchild	0.12	(0.23)	0.04*	(0.02)
health_standardised	0.20***	(0.08)	0.02***	(0.01)
Education *(reference group: low education)*				
university	0.78***	(0.25)	0.11***	(0.02)
vocational_high	0.57***	(0.22)	0.02	(0.02)
vocational_intermediate	-0.17	(0.22)	-0.01	(0.02)
preuniversity	0.24	(0.29)	-0.00	(0.03)
Personality traits				
riskaversion_standardised	0.12*	(0.07)	-0.02***	(0.01)
patience_standardised	0.07	(0.08)	0.02**	(0.01)
conscientiousness_standardised	-0.17***	(0.07)	-0.01**	(0.01)
locus_of_control_standardised	-0.13	(0.08)	0.02***	(0.01)
_cons	63.45***	(0.49)		
N	8103		12176	
(Peuso) R^2	0.126		0.0563	
Time dummies	Yes		Yes	

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. In parentheses we report standard errors, which are clustered at the household level. For the probit regression (column 2) we report marginal effects, which can be interpreted as the percentage change resulting from a unit change, measured at the mean. Pseudo R^2 is McFadden's.

The last lines of Table 3 show regression results for our four measures of *personality traits*. First, risk averse respondents are less keen on raising the retirement age, although they do expect to retire later (significant at 10% level). Second, conscientious individuals expect to retire earlier and are also less

keen on raising the retirement age. Furthermore, also patience and locus of control matter for reform preferences. To be precise, someone who is one standard deviation more patient or has one standard deviation more locus of control than average, is 2 percent more likely to support raising the retirement age.

Goodness of fit

The goodness of fit of our models is not very high, as is often the case with this kind of survey data (see e.g. Boeri *et al.* 2001, 2002, 2012; Blinder & Krueger, 2004). Of the expected retirement age, just 13 per cent of variation can be explained with our covariates. In the probit regression, our pseudo R^2 is just below 6 per cent.[18] Clearly, it is difficult to attribute expectations and preferences to observed characteristics even with a rich set of respondent characteristics. Still, above we have found many factors that significantly affect expectations and preferences and we have seen the fit of the model growing as we went along. Table 4 summarises the goodness of fit of both models, and the share that can be attributed to the various subsets of covariates, whereby we now split the economic components (age, labour market status, income & wealth). The regressors' share in the total total R^2 is calculated using the Shorrocks-Shapley decomposition (Chavez Juarez, 2015). For both the expected retirement age and preferences for PAYG reform, the year effects are clearly the strongest predictors (64 and 48 per cent, respectively). Furthermore, demographic factors explain most of the remaining variation in the expected retirement age, followed by income and wealth and education. Age, occupational status and personality traits can explain much less. As to preferences, education, occupational status and personality traits account for most of the remaining variation, while age, income, wealth and demography play a more limited role.

Of course, the *gross* contributions to overall variation (i.e. when not including controls) of these factors can be higher. For instance, when we do not control for education, income and occupational status, age probably can explain more variation of respondents' preferences for reform than the reported 6,1% in Table 4. Table A.7 in the Appendix therefore shows the gross contributions of the various sets of regressors. The results are rather actually similar. Taking the example of age, its contribution increases to 8,6% – but in relative terms the explanatory power of age still ranks 6th (after the year dummies, education, personality, occupational status and demographic factors).[19]

[18] Recall that probit and other logistic regressions are estimated by maximizing likelihood in an iterative process and there is no equivalent to OLS' R^2. The literature has proposed several alternative measures. Throughout the text, we report McFadden's R^2 which is reported as default in Stata. The number of other R^2 measures somewhat differs – running from to 0.05 to 0.12 for our full model; however their relative explanatory power of covariates – and hence the percentages reported in Table 4 – is exactly proportional.

[19] The results are also by and large the same when we exclude the year 2013, when the reform was already implemented.

Table 4 Decomposition goodness of fit

	Expectations		Preferences	
	R^2	% full model	Pseudo R^2	% full model
Age	0.002	1.6%	0.003	6.1%
Occupational status	0.001	1.0%	0.007	12.2%
Income/wealth	0.008	6.6%	0.001	1.8%
Demographic	0.021	16.9%	0.004	6.4%
Education	0.008	6.5%	0.008	14.0%
Personality	0.004	3.5%	0.006	11.3%
Time	0.080	63.9%	0.027	48.1%
Total	0.126	100.0%	0.056	100.0%

Note: decomposition of goodness of fit of the models models presented in Table 3, where the (pseudo) R^2 is decomposed into the contributions of seven sets of regressors using the Shorrocks-Shapley decomposition (calculated with Stata's `shapley2` command, see Chavez Juarez 2015).

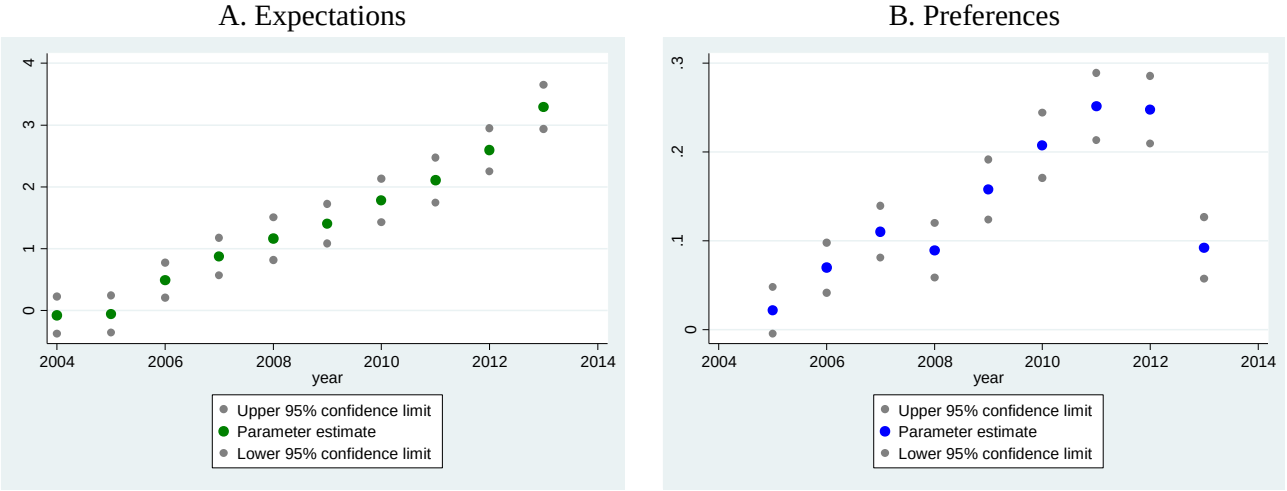
6. A closer look at the year effects

Chart 5 and 6 already indicated that support for raising the retirement age displayed an upward trend in the 2004-2013 period. In fact, in our regressions shown above it was the single most important factor, explaining 64 per cent of the explained fit of the model of the expected retirement age and 48 per cent of the explained fit of the preferences for AOW reform. Hence, it is informative to look at the coefficients for the time dummies in some more detail. Unfortunately, with ten survey moments (eleven in the case of the expected retirement age) it will be difficult to causally attribute the rise of a coefficient of year dummy from one year to a single event. Our approach is hence qualitative. We first plot the coefficients and identify some key patterns. We then assess what possible explanations would fit these patterns.

Chart 6 below shows the year effects of the above regression of the expected retirement age (Panel A) and support for raising the retirement age (Panel B) for all respondents jointly. Note that the time effects are relative to the base year 2004 (2003 for the expected retirement age) and that the regression controlled for all the covariates used above (in Section 7 we show that these time effects are robust to using a fixed effects panel regression). Furthermore, recall that the surveys took place in April/May each year. The panels show some interesting patterns. First, Panel A shows that the age at which our respondents expected to retire was stable over the surveys of 2003-2005, but witnessed a continuous upward trend thereafter. Second, support for raising the retirement age (panel B) rose during 2005-7, dropped in spring 2008, rising thereafter to stabilise in 2012 (April). One month later, a deal was made on the increase of the retirement age to 67 in 2023, starting already in 2013. In the 2013 survey, support for a further increase of the retirement age dropped, although the level was still higher than in 2004-2005. Panels A-L of Chart A.1 in the Appendix show the year effects for different groups of respondents (age, occupational status, etc.). The time pattern is actually quite similar for most subgroups, suggesting that there are not very large differences in how different groups changed

their expectations and preferences for reform. There are some interesting differences, though (although the confidence intervals of the point estimates will often overlap). For instance, panel A shows that young respondents were expecting to retire at the lowest age in most years until 2011, when they expected to retire at the highest age. Furthermore, the panels on the right show that the 2008 drop in support for raising the retirement age took place especially among older respondents, females, those working in the household, the lower-skilled and risk averse, conscientious and low locus-of-control respondents but much less so among the youngest respondents, the self-employed, higher-skilled and risk seeking respondents.

Chart 6 Year effects of regressions on retirement expectations and preferences



Note: Panel A shows the year coefficients from the regression of the expected age of retirement, Panel B from the probit regression on preferences for AOW reform (base years are 2003 and 2004, respectively). The coefficient is shown for the month in which the survey was conducted. Grey dots show lower and upper confidence bounds.

What factors can account for these patterns? In Section 3 we highlighted some important moments in the reform process: the ABP deal on the early retirement scheme in summer 2005, the attention to population ageing around the publication of the government's budget in September 2006, the failure of the SER negotiations in October 2009 (and the subsequent reform proposals), plus the public awareness campaign on the implementation of a higher the retirement age in November 2012.

Furthermore, of course also economic conditions could play a role. First, given that a part of Dutch PAYG pensions are paid from the general budget, worsening economic conditions and public finances might influence respondents' expectations and preferences for AOW reform. Second, as the first and second pillar pensions are linked in several ways (see Section 3), it is possible that funding problems in the second pillar affect attitudes towards the PAYG system. Table 7 gives an overview of economic conditions just before our surveys were conducted (first quarter). It shows first of all that up till the 2008 survey, overall economic conditions were developing favourably. In between the 2008 and 2009 surveys, GDP dropped substantially and as a result the debt-to-GDP ratio also worsened,

aggravated by government interventions in financial institutions. Furthermore, the funding position of second pillar funds decreased significantly due to large investment losses, falling interest rates and an upward revisions in the life expectancy at retirement.

Table 5 GDP, government debt and second pillar funding rate, 2003q1-2013q1

Quarter	GDP growth	Government debt	Second pillar funding rate
2003q1	0.9	49.3	114
2004q1	1.1	50.3	121
2005q1	1.3	49.4	134
2006q1	3.1	48.3	144
2007q1	3.6	44.7	140.9
2008q1	3.6	43.3	132.3
2009q1	-4.2	57.3	91.8
2010q1	0.1	57.3	108.2
2011q1	2.6	59.1	111.8
2012q1	-1.6	62.2	98.6
2013q1	-0.9	66.4	106.5

Source: Statistics Netherlands, DNB. Note: year-on-year quarterly growth rate of GDP, government debt (EMU definition) as percentage GDP and the average funding rate of Dutch second pillar pensions is expressed as % of liabilities (for years 2003-2006 only annual figures available)

Combining Charts 2, 6 and Table 7 allows us to speculate on the factors that could drive our year effects for respondents' preferences. First, support for raising the retirement age in the years 2005-2007 is likely related to public discussions around the phasing out of the early retirement scheme – including the public attention to the ABP deal in 2005 – and public reports on societal ageing in 2006. Second, google search activity on ageing and retirement issues was relatively subdued in the period 2007-2008, which might help explain the drop in support in early 2008.[20] Third, the gradually increasing support for raising the retirement age after the crisis had hit is probably due to a combination of increased awareness of fiscal constraints and increased public discussions on the retirement age[21]. Fourth, after the raise of the statutory retirement age had been decided upon and communicated, respondents expected to retire even later. At the same time, support for further increasing in the statutory retirement age fell, although it remained at higher levels than in 2004-2005.

[20] On the basis of a large collection of newspaper articles, Van der Wiel (2009) confirms that in this period the public discussion on the future of public old age security had halted.

[21] In informal discussions with people who closely followed or were directly involved in the reform process, several of them noted their surprise on how fast public opinion got more favourable towards raising the retirement age after the global financial crisis had hit.

7. Sensitivity analysis

This section performs several checks on the robustness of the results obtained above. We first explore in what ways our results may suffer from selection bias. Even though the DHS is set up as a representative panel, there can be various sources for this. First, attrition can be non-random.[22] While we can correct for observed characteristics, respondents who continue to participate might also differ on unobserved characteristics that we cannot measure (e.g. a keener interest in pensions). Hence, it is possible that the time effects pick up compositional changes of our sample. To correct for this option, we can exploit the fact that a majority of respondents took part in the survey several times and estimate the time effects with a panel regression where we can single out fixed effects, i.e. all time-invarying covariates, whether observed or not. Chart A.2 in the Appendix compares the time coefficients presented above with the time effects resulting from a fixed effects panel regression. Although coefficients differ, the time patterns described above are the same.

Second, it is possible that merging the data from various modules affects our results. For instance, those not taking part in all surveys might be less keen on financial matters. To assess this possibility, we compare the stability of coefficients as we add variables one by one (as done in Tables 5.1-6.2) but now with a fixed sample including the information of all covariates (N=8,103 and N= 12,176 respectively). The results (not reported) show no changes in coefficients and significance levels. Hence we do not find evidence that the merging process influences our results.

Third, it is possible that our imputation method influences our results. As noted, we have imputed missing values of some variables – particularly the psychological traits, which were not included in the survey each year – with the mean of the values observed for the respective individual in other years. We did so because such traits are typically time-invariant, although there is evidence of some variation over time, especially of risk aversion (see footnote 17). Furthermore, of course, the extent of measurement error can vary over time. As a robustness check, we therefore also apply a stricter imputation method whereby we impute missing values with the value observed in the closest year this question was asked. This reduces the samples by around a third and in the regression of the expected retirement age some variables lose statistical significance (e.g. the dummies for the third wealth quartile, higher vocational training and risk aversion). All other results are largely the same.

Fourth, while respondents' characteristics might influence their decision to continue in the panel, it is also possible that respondents are 'treated' by answering our questions. This goes especially for the question on AOW reform. It is not unlikely that when respondents have to think about options for AOW reform several times, they will be more likely to develop concerns about the sustainability of the scheme, and hence grow more supportive of raising the retirement age. Table A.8 in the

[22] Indeed, when regressing the frequency of participation on our covariates of Section 5, we find that male, older and higher-income respondents are significantly more likely to continue to participate.

Appendix shows the results from a fixed effects regression for the 'frequency of participation' variable (recall that it runs from 1 to 11). Coefficients are not significant, so we do not find evidence of a 'treatment effect' of taking part several times.

Fifth, while above we have used respondents' *first choice* for AOW reform only, we can also exploit respondents *second preferred option* to reform the AOW in an ordered logistic regression. Table A.9 in the Appendix compares the results. While we cannot properly compare the coefficients, we can compare the signs and relative sizes of the coefficients. Most of the results remain the same when including the order of preferences. At the same time, there are some differences. First, coefficients of two covariates – conscientiousness and locus of control – are not significant anymore in the ordered logit setting. Thus, while respondents who are conscientious or have a low locus of control are significantly less likely to list raising the retirement age as *first choice* for AOW reform, this effect does not hold when including their second preferred option. Second, in the ordered logistic setting, some covariates now yield significant results. When we take into account the second preferred option, respondents aged 55-65 are now significantly (at 10% level) less likely to support raising the retirement age than respondents aged 35-45. The same goes for respondents in the third income quartile and the highest wealth quartile, who are significantly less in favour of raising the retirement age than those the lowest income cq. wealth quartiles (and instead lend more support to lowering benefit levels).

Last, we assess to what extent the year 2013 matters for our conclusions. The increase of the retirement age had been decided upon in 2012. Hence, at the time of the 2013 survey respondents faced a new situation and the dependent variable actually captures support for *additional* reforms. Furthermore, as seen in Section 4, in 2013 we have a higher proportion of young entrants in our survey that might also differ on non-observable characteristics. However, when excluding the year 2013, our results are largely the same (see Table A.10 in the Appendix).

8. Conclusion

Governments often find it hard to pursue economic reforms, even if they have the potential to support long-run growth and will eventually benefit a majority of voters. The literature is still not conclusive about what constitute the more systematic drivers of public acceptance of reform. This paper has zoomed in into an important recent Dutch reform: the gradual increase of the statutory retirement age to 67 in 2023, increasing with life expectancy thereafter. By inspecting household expectations about their retirement and their preferences for AOW reform in the 2003-2013 period, we have shed some new light on the respective role of economic and demographic factors, education and personality traits and the passage of time in driving expectations and preferences for reform of the statutory retirement age.

Our most important findings can be summarised as follows. First, of the individual covariates, we find that age plays only a limited role. Younger and older respondents have clearly different economic interests, and age plays a key role in political economy models of PAYG reform. Indeed, respondents aged 45 to 55 do display relatively strong resistance against raising the retirement age. At the same time, this effect is smaller than some other covariates and age explains only a relatively small fraction of the observed variation. This can be due to solidarity between generations but also to limited understanding of young respondents on the need for reform: the youngest households are often expecting to retire early. We also do not find a significant role for income, even though PAYG schemes entail a fair share of redistribution. On the other hand, we find that education, personality traits and employment status appear the more comprehensive drivers of acceptance of reform at the individual level. As regards education, particularly university graduates are sympathetic to a higher statutory retirement age. Various channels can be at play in the relation between education and preferences. First, university-educated individuals have higher incomes and may resist the redistribution in PAYG systems; we control for this by including income as separate regressor. Furthermore, higher-educated individuals could have higher job satisfaction, facilitating support for the reform. However, when including job satisfaction in our regression (see footnote 15), the effect of education on support for reform did not change. A remaining channel could be that university-graduates are better informed about the working of the pension system than other respondents. Furthermore, occupational status plays an important role and employees are clearly more hostile to raising the retirement age than the self-employed and those receiving benefits. Finally, we have also found an important role for psychological traits as underlying drivers of attitudes towards reform. All four personality traits exert a significant impact on preferences for reform and their variation can explain a fair share of the total variation among respondents. The results are also very robust to the inclusion of other variables, although two traits lose significance in the ordered logistic setting of reform preferences.

Second, and most importantly, our year effects explain the largest share of variation of respondents' expectations and preferences and the year effects are robust to other specifications. During the 2003-2013 period, public opinion gradually grew more favourable towards later retirement. Already in the years 2004-6, when economic conditions and public finances were still benign, support for raising the retirement age grew. We attribute this to reports on the costs of ageing and public discussions on the closure of early retirement. Furthermore, when these discussions halted in 2007-early 2008, support for reform somewhat dropped. When the crisis set in, the government proposed to raise the retirement age as part of a long-term consolidation package and some years of political discussions followed. In these years also expectations and preferences gradually grew increasingly favourable of working longer. Estimating the year effects by groups confirm that this gradual increase of support happened among virtually all groups. These findings suggest that distributional clashes were

not at the heart of the observed resistance to raising the retirement age. Instead, we interpret our results as a collective learning process in which respondents have gradually updated both their expectations and preferences on the retirement age in response to new information and communication.

Our research offers some broad guidelines for policymakers. First, our results suggest that when it comes to the reform of a collective scheme like pensions, the most important challenge for policymakers is to convince the public at large, rather than breaking the opposition of particular groups. Second, our results underline the usefulness of reliable and easily understandable information on the financial position of the pension system. Especially young respondents appeared to have rather naïve expectations on their possibilities for early retirement, possibly holding back support for reform. Furthermore, the peak of google search activity on ageing in 2006 confirms that the issuance of independent reports on this topic helped raise public awareness. Third, our results indicate that personality traits are important for public acceptance of reforms. Given that such traits are largely time-invariant, Kouba & Pitlik (2014) conclude that welfare state reform can be enhanced in the long run by educational and social policies that support the independence and self-confidence of people. At the same time, appreciation of fundamental attitudes towards reform can offer some lessons in the short run as well. For instance, when people resist reforms because they are risk averse or feel they would lose control of their lives, policymakers should pay due attention to offer the public new perspectives in return. Last, our results underscore the usefulness of incremental steps in the reform process. Although the government did only propose raising the retirement age in 2009, the phasing out of early retirement schemes in 2004-5 appears to have spurred support of households for a higher retirement age. These steps have as such helped the government to prepare the public for the larger reform.

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Appendix A Tables and charts

Table A.1 Main variables used

D = dummy variable

Variable	Meaning
Main independent variables	
expected_retirementage	'At what age do you expect to retire, or make use of the early retirement arrangement?'
aow_reform_pref1	"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 at the age of 65", 2. "an increase of the old-age pension premium for people working", 3. "increase the age by two years (from 65 to 67 years of age) on which one will receive the general old-age pension" From 2012 onwards – when the government had raised of the statutory retirement age – the last option was asked without reference to 65/67.
aow_reform_pref2	"Which of the two remaining measures appeals the most to you thereafter?" (1, 2, 3)
pref_aowage_up (D)	Respondent's 1st choice is to raise the retirement age
aowreform_prefcat (used in our ordered logit regression)	Support for raising the retirement age as: 1. Last choice 2. Second choice *3.* First choice
Covariates	
age	Approximate age of respondent (year survey minus year of birth)
below35, etc. (D)	Respondent is aged below 35, etc.
employee (D)	Employed on a contractual basis
self_employed (D)	Works in own business, free profession, freelance, self-employed
household (D)	Respondent works in own household
benefits (D)	Respondent is (pre)retired, disabled, or working keeping benefit payments
other (D)	Respondent is busy otherwise (student, looking for work, volunteering)
grossincome	Total annual gross income (in EUR 1,000)
financial_wealth	Total of financial assets (in EUR 1,000, can be negative)
female (D)	Female
married (D)	Married
child (D)	One or more children
grandchild (D)	One or more grandchildren
health	Self-reported health score (5 categories, 5=highest)
university (D)	University
vocational_high (D)	Vocational colleges (HBO)
vocational_intermediate (D)	Intermediate vocational training (MBO)
preuniversity (D)	Pre-university education (HAVO/VWO)
low (D)	Special, primary or lower vocational
riskaversion	Respondent's score on risk aversion (see Table A3)
patience	Respondent's score on patience (see Table A3)
conscientious	Respondent's score on conscientiousness (see Table A3)
locus_of_control	Respondent's score on locus of control (see Table A3)
frequency	Frequency of participation in the questionnaire on retirement expectations and preferences (runs from 1 to maximum 11 for each individual)

Table A.2 Comparison covariates respondents expected retirement age & full sample

	Respondents who report expected retirement age		Full sample (excluding non-active respondents)	
	count	mean	count	mean
preference_aowage_up	8279	0.29	10448	0.29
age	9278	44.51	11448	43.98
employee	9278	0.91	11448	0.89
self_employed	9278	0.07	11448	0.08
household	9278	0.00	11448	0.00
benefits	9278	0.00	11448	0.00
other	9278	0.02	11448	0.03
grossincome	8855	37.92	10804	36.19
financial_wealth	8976	31.13	11040	29.84
female	9278	0.39	11448	0.41
married	9278	0.62	11448	0.61
child	9278	0.52	11448	0.51
grandchild	9278	0.08	11448	0.08
health	9022	4.01	11089	3.98
university	9278	0.22	11448	0.20
vocational_high	9278	0.32	11448	0.31
vocational_intermediate	9278	0.20	11448	0.21
preuniversity	9278	0.08	11448	0.08
low	9278	0.17	11448	0.18
riskaversion	8781	5.18	10748	5.18
patience	8824	4.16	10876	4.14
conscientiousness	8817	4.41	10872	4.40
locus_of_control	8416	4.63	10383	4.59
frequency	9278	3.48	11448	3.48
N	9278		11448	

Note: Table compares covariates of the group of respondents that reported an expected age of retirement with covariates of the full sample (i.e. including respondents that did not list an expected age of retirement). In both samples, inactive participants are excluded.

Table A.3 Statements used to measure personality traits

Risk aversion
I think it is more important to have safe investments and guaranteed returns, than to take a risk to have a chance to get the highest possible returns
I would never consider investments in shares because I find this too risky
If I think an investment will be profitable, I am prepared to borrow money to make this investment *(reverse)*
I want to be certain that my investments are safe
I get more and more convinced that I should take greater financial risks to improve my financial position *(reverse)*
I am prepared to take the risk to lose money, when there is also a chance to gain money *(reverse)*
Patience
I think about how things can change in the future, and try to influence those things in my everyday life
I often work on things that will only pay off in a couple of years
I am only concerned about the present, because I trust that things will work themselves out in the future *(reverse)*
With everything I do, I am only concerned about the immediate consequences (say a period of a couple of days or weeks) *(reverse)*
Whether something is convenient for me or not, to a large extent determines the decisions that I take or the actions that I undertake *(reverse)*
I am ready to sacrifice my well-being in the present to achieve certain results in the future
I think it is important to take warnings about negative consequences of my acts seriously, even if these negative consequences would only occur in the distant future
I think it is more important to work on things that have important consequences in the future, than to work on things that have immediate but less important consequences
In general, I ignore warnings about future problems because I think these problems will be solved before they get critical *(reverse)*
I think there is no need to sacrifice things now for problems that lie in the future, because it will always be possible to solve these future problems later *(reverse)*
I only respond to urgent problems, trusting that problems that come up later can be solved in a later stage *(reverse)*
I get clear results in my daily work, this is more important to me than getting vague results
Conscientiousness
I do chores right away
I'll leave my things lying around *(reverse)*
I live my life according to schedules
I neglect my obligations *(reverse)*
I have an eye for details
I am accurate in my work

I forget to put things back where they belong *(reverse)*
I am always well prepared
I often make a mess of things *(reverse)*
I like order.
Locus of control
Saving and careful investing is a key factor in becoming rich
Whether or not I get to become wealthy depends mostly on my ability
In the long run, people who take very good care of their finances stay wealthy
If I become poor, it's usually my own fault
I am usually able to protect my personal interests
When I get what I want, it's usually because I worked hard for it
My life is determined by my own actions
There is little one can do to prevent poverty *(reverse)*
Becoming rich has nothing to do with luck
Regarding money, there isn't much you can do for yourself when you are poor *(reverse)*
It's not always wise for me to save because many things turn out to be a matter of good or bad fortune *(reverse)*
It is chiefly a matter of fate whether I become rich or poor *(reverse)*
Only those who inherit or win money can possible become rich *(reverse)*

Note: The table lists the statements for which respondents need to rate to what extent they agree with them or not (on a 1 to 5 or 1 to 7 scale). By averaging the answers (reversing the reverse-coded ones), we construct our composite measures of risk aversion, patience, conscientiousness and locus of control.

Table A.4 Summary statistics by year

	2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013	
	N	mean	N	mean	N	mean	N	mean	N	mean	N	mean	N	mean	N	mean	N	mean	N	mean	N	mean
preference_aowage_up	.	.	1515	0.18	1645	0.20	1547	0.25	1465	0.28	1359	0.26	1366	0.33	1183	0.38	1187	0.43	1224	0.44	1232	0.27
expected_retirementage	999	62.59	949	62.32	1001	62.23	910	62.98	893	63.21	830	63.53	864	63.80	727	64.18	638	64.57	710	65.03	757	65.57
age	999	42.47	1515	45.36	1645	44.00	1547	44.63	1465	45.68	1359	46.92	1366	47.60	1183	49.22	1187	49.83	1224	49.62	1232	45.02
employee	999	0.95	1515	0.68	1645	0.68	1547	0.68	1465	0.67	1359	0.66	1366	0.66	1183	0.65	1187	0.63	1224	0.65	1232	0.73
self_employed	999	0.04	1515	0.05	1645	0.05	1547	0.05	1465	0.05	1359	0.06	1366	0.07	1183	0.08	1187	0.09	1224	0.08	1232	0.07
household	999	0.00	1515	0.11	1645	0.11	1547	0.11	1465	0.11	1359	0.10	1366	0.09	1183	0.08	1187	0.09	1224	0.08	1232	0.07
benefits	999	0.00	1515	0.11	1645	0.11	1547	0.11	1465	0.13	1359	0.14	1366	0.14	1183	0.14	1187	0.16	1224	0.14	1232	0.09
other	999	0.01	1515	0.05	1645	0.06	1547	0.05	1465	0.04	1359	0.03	1366	0.04	1183	0.05	1187	0.03	1224	0.04	1232	0.04
grossincome	922	36.18	1445	31.03	1556	30.06	1473	29.36	1418	29.97	1322	31.10	1305	32.71	1125	34.91	1154	34.82	1158	35.30	1125	35.82
financial_wealth	964	26.43	1482	26.55	1583	26.88	1507	27.75	1449	27.85	1333	32.01	1314	33.54	1141	38.73	1157	39.41	1187	35.77	1142	28.04
female	999	0.35	1515	0.45	1645	0.48	1547	0.47	1465	0.48	1359	0.48	1366	0.46	1183	0.45	1187	0.47	1224	0.47	1232	0.49
married	999	0.63	1515	0.65	1645	0.64	1547	0.64	1465	0.66	1359	0.67	1366	0.66	1183	0.65	1187	0.65	1224	0.65	1232	0.58
child	999	0.53	1515	0.55	1645	0.55	1547	0.55	1465	0.56	1359	0.57	1366	0.57	1183	0.54	1187	0.54	1224	0.54	1232	0.47
grandchild	999	0.05	1515	0.11	1645	0.11	1547	0.10	1465	0.12	1359	0.12	1366	0.15	1183	0.17	1187	0.18	1224	0.16	1232	0.12
health	964	4.01	1484	3.87	1594	3.90	1506	3.89	1447	3.91	1341	3.91	1328	3.89	1151	3.91	1171	3.90	1187	3.88	1149	3.92
university	999	0.20	1515	0.17	1645	0.16	1547	0.16	1465	0.16	1359	0.17	1366	0.18	1183	0.18	1187	0.18	1224	0.18	1232	0.22
vocational_high	999	0.32	1515	0.29	1645	0.29	1547	0.28	1465	0.28	1359	0.28	1366	0.28	1183	0.29	1187	0.28	1224	0.29	1232	0.33
vocational_intermediate	999	0.21	1515	0.20	1645	0.22	1547	0.22	1465	0.22	1359	0.21	1366	0.21	1183	0.19	1187	0.20	1224	0.21	1232	0.21
preuniversity	999	0.09	1515	0.09	1645	0.10	1547	0.09	1465	0.10	1359	0.09	1366	0.09	1183	0.10	1187	0.09	1224	0.10	1232	0.08
low	999	0.18	1515	0.25	1645	0.23	1547	0.24	1465	0.24	1359	0.25	1366	0.23	1183	0.24	1187	0.23	1224	0.22	1232	0.16
riskaversion	837	5.15	1429	5.23	1552	5.23	1475	5.18	1416	5.15	1312	5.25	1286	5.31	1144	5.33	1148	5.33	1168	5.30	1133	5.28
patience	844	4.13	1451	4.14	1576	4.11	1498	4.11	1438	4.09	1297	4.11	1299	4.09	1163	4.13	1165	4.15	1189	4.16	1169	4.18
conscientiousness	825	4.39	1442	4.40	1575	4.39	1491	4.36	1441	4.40	1319	4.41	1302	4.40	1163	4.46	1169	4.49	1189	4.48	1169	4.45
locus_of_control	714	4.61	1253	4.55	1524	4.56	1467	4.52	1431	4.57	1288	4.52	1285	4.55	1103	4.56	1159	4.57	1120	4.56	1159	4.53
frequency	999	1.00	1515	1.49	1645	2.09	1547	2.79	1465	3.52	1359	4.07	1366	4.50	1183	4.58	1187	5.05	1224	5.08	1232	4.97
N	999		1515		1645		1547		1465		1359		1366		1183		1187		1224		1232	

Note: Table shows summary statistics for respondents who reported information preferences for AOW reform, of which a subset also was asked about their expected retirement age. In 2003 respondents were not yet asked about their preferences for AOW reform, only the expected retirement age. Given not all respondents respond to this question, summary statistics of 2003 and 2004-2013 are not comparable.

Table A.5.1. Stability of coefficients – expected retirement age

	(1)		(2)		(3)		(4)		(5)		(6)	
below35	-0.31	(0.20)	-0.31	(0.20)	-0.31	(0.21)	-0.43**	(0.21)	-0.51**	(0.21)	-0.48**	(0.23)
age45to55	-0.35**	(0.16)	-0.35**	(0.16)	-0.33**	(0.16)	-0.27*	(0.16)	-0.21	(0.15)	-0.19	(0.16)
age55to65	-0.40**	(0.16)	-0.40**	(0.16)	-0.36**	(0.17)	-0.25	(0.17)	-0.21	(0.18)	-0.21	(0.18)
self_employed			0.36	(0.35)	0.51	(0.37)	0.40	(0.36)	0.26	(0.36)	0.35	(0.37)
other			0.05	(0.35)	0.02	(0.36)	-0.27	(0.35)	-0.35	(0.35)	-0.52	(0.37)
incomeQ2					-0.16	(0.39)	-0.10	(0.38)	-0.15	(0.38)	0.16	(0.37)
incomeQ3					0.46	(0.39)	0.16	(0.38)	-0.08	(0.38)	0.18	(0.37)
incomeQ4					0.18	(0.40)	-0.22	(0.40)	-0.64	(0.40)	-0.36	(0.39)
wealthQ2					-0.12	(0.19)	-0.14	(0.18)	-0.18	(0.18)	-0.15	(0.19)
wealthQ3					-0.41**	(0.18)	-0.41**	(0.18)	-0.48***	(0.18)	-0.41**	(0.19)
wealthQ4					-0.73***	(0.19)	-0.76***	(0.18)	-0.90***	(0.18)	-0.77***	(0.19)
female							-0.89***	(0.14)	-1.01***	(0.14)	-1.01***	(0.15)
married							-0.76***	(0.15)	-0.67***	(0.16)	-0.73***	(0.16)
grandchild							0.04	(0.22)	0.12	(0.23)	0.12	(0.23)
health_standardised							0.18**	(0.07)	0.15**	(0.07)	0.20***	(0.08)
university									0.78***	(0.24)	0.78***	(0.25)
vocational_high									0.61***	(0.21)	0.57***	(0.22)
vocational_intermediate									-0.16	(0.21)	-0.17	(0.22)
preuniversity									0.16	(0.28)	0.24	(0.29)
riskaversion_standardised											0.12*	(0.07)
patience_standardised											0.07	(0.08)
conscientiousness_standardised											-0.17***	(0.07)
locus_of_control_standardised											-0.13	(0.08)
_cons	62.83***	(0.15)	62.81***	(0.15)	62.98***	(0.45)	63.96***	(0.46)	63.87***	(0.49)	63.45***	(0.49)
N	9278		9278		8717		8717		8717		8103	
R^2	0.078		0.079		0.089		0.109		0.117		0.126	
Time dummies	Yes		Yes		Yes		Yes		Yes		Yes	

Note: various sets of covariates (age, occupational status, income/wealth, demographics, education and personality traits) are added one by one. Column 6 is the full model and corresponds to column 1 in Table 3. Covariates are highlighted green when coefficients are significant throughout and blue when only significant in some specifications. In parentheses are standard errors.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.5.2. Stability of coefficients – expected retirement age (reverse order)

	(1)		(2)		(3)		(4)		(5)		(6)	
riskaversion_standardised	0.01	(0.07)	0.04	(0.07)	0.14**	(0.07)	0.11	(0.07)	0.12*	(0.07)	0.12*	(0.07)
patience_standardised	0.09	(0.09)	0.03	(0.08)	0.04	(0.08)	0.06	(0.08)	0.06	(0.08)	0.07	(0.08)
conscientiousness_standardised	-0.21***	(0.07)	-0.19***	(0.07)	-0.17***	(0.07)	-0.18***	(0.07)	-0.17***	(0.07)	-0.17***	(0.07)
locus_of_control_standardised	-0.09	(0.09)	-0.14*	(0.08)	-0.18**	(0.08)	-0.12	(0.09)	-0.14	(0.09)	-0.13	(0.08)
university			0.74***	(0.23)	0.56**	(0.24)	0.78***	(0.25)	0.76***	(0.25)	0.78***	(0.25)
vocational_high			0.43**	(0.21)	0.43**	(0.21)	0.56**	(0.22)	0.54**	(0.21)	0.57***	(0.22)
vocational_intermediate			-0.14	(0.22)	-0.18	(0.21)	-0.17	(0.22)	-0.18	(0.22)	-0.17	(0.22)
preuniversity			0.13	(0.28)	0.14	(0.29)	0.26	(0.29)	0.25	(0.29)	0.24	(0.29)
female					-0.89***	(0.14)	-1.01***	(0.15)	-1.01***	(0.15)	-1.01***	(0.15)
married					-0.73***	(0.16)	-0.67***	(0.16)	-0.68***	(0.16)	-0.73***	(0.16)
grandchild					0.04	(0.22)	0.10	(0.23)	0.09	(0.22)	0.12	(0.23)
health_standardised					0.20**	(0.08)	0.20**	(0.08)	0.19**	(0.08)	0.20***	(0.08)
incomeQ2							0.20	(0.37)	0.20	(0.37)	0.16	(0.37)
incomeQ3							0.23	(0.37)	0.25	(0.37)	0.18	(0.37)
incomeQ4							-0.29	(0.39)	-0.27	(0.39)	-0.36	(0.39)
wealthQ2							-0.14	(0.19)	-0.15	(0.19)	-0.15	(0.19)
wealthQ3							-0.38**	(0.19)	-0.39**	(0.19)	-0.41**	(0.19)
wealthQ4							-0.72***	(0.20)	-0.73***	(0.19)	-0.77***	(0.19)
self_employed									0.37	(0.37)	0.35	(0.37)
other									-0.54	(0.37)	-0.52	(0.37)
below35											-0.48**	(0.23)
age45to55											-0.19	(0.16)
age55to65											-0.21	(0.18)
_cons	62.46***	(0.13)	62.21***	(0.19)	63.01***	(0.23)	63.16***	(0.48)	63.17***	(0.47)	63.45***	(0.49)
N	8315		8315		8235		8103		8103		8103	
R2	0.087		0.094		0.116		0.123		0.124		0.126	
Time dummies	Yes		Yes		Yes		Yes		Yes		Yes	

Note: various sets of covariates (age, occupational status, income/wealth, demographics, education and personality traits) are added one by one. Column 6 is the full model and corresponds to column 1 in Table 3. Covariates are highlighted green when coefficients are significant throughout and blue when only significant in some specifications. In parentheses are standard errors.
* p < 0.10, ** p < 0.05, *** p < 0.01.

Table A.6.1 Stability of coefficients – support for raising the statutory retirement age

	(1)		(2)		(3)		(4)		(5)		(6)	
below35	-0.00	(0.02)	0.00	(0.02)	0.01	(0.02)	-0.01	(0.02)	-0.01	(0.02)	-0.01	(0.02)
age45to55	-0.08***	(0.02)	-0.09***	(0.02)	-0.09***	(0.02)	-0.09***	(0.02)	-0.08***	(0.02)	-0.06***	(0.02)
age55to65	-0.01	(0.02)	-0.04**	(0.02)	-0.04**	(0.02)	-0.05**	(0.02)	-0.04**	(0.02)	-0.02	(0.02)
self_employed			0.12***	(0.02)	0.13***	(0.03)	0.13***	(0.03)	0.11***	(0.03)	0.10***	(0.03)
household			0.00	(0.02)	0.01	(0.03)	0.03	(0.03)	0.04	(0.03)	0.04	(0.03)
benefits			0.08***	(0.02)	0.10***	(0.02)	0.11***	(0.02)	0.11***	(0.02)	0.11***	(0.02)
other			0.01	(0.02)	0.03	(0.03)	0.02	(0.03)	0.01	(0.03)	0.02	(0.03)
incomeQ2					-0.02	(0.02)	-0.02	(0.02)	-0.02	(0.02)	-0.01	(0.02)
incomeQ3					0.01	(0.02)	-0.01	(0.02)	-0.03	(0.02)	-0.01	(0.02)
incomeQ4					0.04*	(0.03)	0.03	(0.03)	-0.02	(0.03)	-0.02	(0.03)
wealthQ2					-0.01	(0.02)	-0.01	(0.02)	-0.01	(0.02)	-0.02	(0.02)
wealthQ3					-0.00	(0.02)	-0.01	(0.02)	-0.01	(0.02)	-0.02	(0.02)
wealthQ4					0.01	(0.02)	0.00	(0.02)	-0.02	(0.02)	-0.03	(0.02)
female							-0.02*	(0.01)	-0.03**	(0.01)	-0.02	(0.01)
married							-0.05***	(0.02)	-0.04**	(0.02)	-0.03**	(0.02)
grandchild							0.03	(0.02)	0.04*	(0.02)	0.04*	(0.02)
health_standardised							0.02***	(0.01)	0.02***	(0.01)	0.02***	(0.01)
university									0.12***	(0.02)	0.11***	(0.02)
vocational_high									0.03	(0.02)	0.02	(0.02)
vocational_intermediate									-0.01	(0.02)	-0.01	(0.02)
preuniversity									-0.00	(0.03)	-0.00	(0.03)
riskaversion_standardised											-0.02***	(0.01)
patience_standardised											0.02**	(0.01)
conscientiousness_standardised											-0.01**	(0.01)
locus_of_control_standardised											0.02***	(0.01)
N	13723		13723		12892		12892		12892		12176	
Pseudo R2	0,033		0,039		0,041		0,044		0,052		0,056	
Time dummies	Yes		Yes		Yes		Yes		Yes		Yes	

Notes: Various sets of covariates (age, occupational status, income/wealth, demographics, education and personality traits) are added one by one. Column 6 is the full model and corresponds to column 2 in Table 3. Covariates are highlighted **green** when coefficients are significant throughout and **blue** when only significant in some specifications. In parentheses are standard errors.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. As in Table 3, we report marginal effects. Pseudo R2 is McFadden's.

Table A.6.2 Stability of coefficients – support for raising the statutory retirement age (reverse order)

	(1)		(2)		(3)		(4)		(5)		(6)	
riskaversion_standardised	-0.02***	(0.01)	-0.02***	(0.01)	-0.02***	(0.01)	-0.02***	(0.01)	-0.02***	(0.01)	-0.02***	(0.01)
patience_standardised	0.02***	(0.01)	0.01**	(0.01)	0.01**	(0.01)	0.02**	(0.01)	0.02**	(0.01)	0.02**	(0.01)
conscientiousness_standardised	-0.01**	(0.01)	-0.01*	(0.01)	-0.01*	(0.01)	-0.01**	(0.01)	-0.01**	(0.01)	-0.01**	(0.01)
locus_of_control_standardised	0.03***	(0.01)	0.02***	(0.01)	0.02**	(0.01)	0.02***	(0.01)	0.02***	(0.01)	0.02***	(0.01)
university			0.10***	(0.02)	0.10***	(0.02)	0.12***	(0.02)	0.12***	(0.02)	0.11***	(0.02)
vocational_high			0.01	(0.02)	0.01	(0.02)	0.03	(0.02)	0.03	(0.02)	0.02	(0.02)
vocational_intermediate			-0.02	(0.02)	-0.01	(0.02)	-0.01	(0.02)	-0.01	(0.02)	-0.01	(0.02)
preuniversity			-0.01	(0.03)	-0.00	(0.03)	0.00	(0.03)	0.00	(0.03)	-0.00	(0.03)
female					-0.01	(0.01)	-0.02	(0.01)	-0.01	(0.01)	-0.02	(0.01)
married					-0.03**	(0.02)	-0.04**	(0.02)	-0.04**	(0.02)	-0.03**	(0.02)
grandchild					0.07***	(0.02)	0.07***	(0.02)	0.04**	(0.02)	0.04*	(0.02)
health_standardised					0.01*	(0.01)	0.01*	(0.01)	0.02***	(0.01)	0.02***	(0.01)
incomeQ2							-0.01	(0.02)	-0.01	(0.02)	-0.01	(0.02)
incomeQ3							-0.04**	(0.02)	-0.02	(0.02)	-0.01	(0.02)
incomeQ4							-0.04*	(0.03)	-0.02	(0.03)	-0.02	(0.03)
wealthQ2							-0.02	(0.02)	-0.02	(0.02)	-0.02	(0.02)
wealthQ3							-0.02	(0.02)	-0.02	(0.02)	-0.02	(0.02)
wealthQ4							-0.03	(0.02)	-0.03*	(0.02)	-0.03	(0.02)
self_employed									0.10***	(0.03)	0.10***	(0.03)
household									0.04	(0.03)	0.04	(0.03)
benefits									0.11***	(0.02)	0.11***	(0.02)
other									0.02	(0.03)	0.02	(0.03)
below35											-0.01	(0.02)
age45to55											-0.06***	(0.02)
age55to65											-0.02	(0.02)
N	12526		12526		12399		12176		12176		12176	
Pseudo R2	0,037		0,044		0,047		0,048		0,054		0,056	
Time dummies	Yes		Yes		Yes		Yes		Yes		Yes	

Notes: Various sets of covariates (age, occupational status, income/wealth, demographics, education and personality traits) are added one by one. Column 6 is the full model and corresponds to column 2 in Table 3. Covariates are highlighted **green** when coefficients are significant throughout and **blue** when only significant in some specifications. In parentheses are standard errors.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. As in Table 3, we report marginal effects. Pseudo R2 is McFadden's.

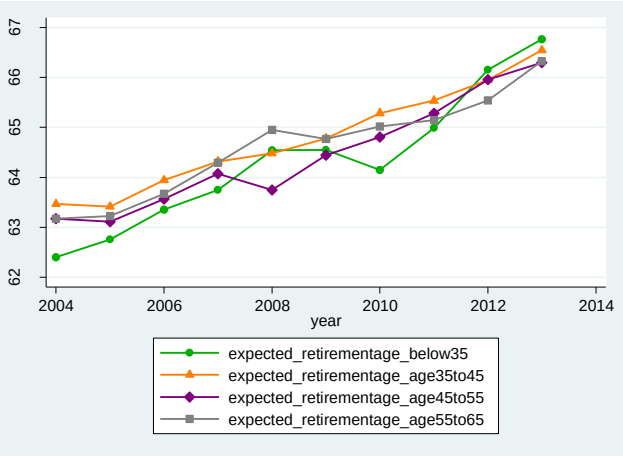
Table A.7 Decomposition goodness of fit – multivariate regression (Table 4) vs univariate regressions

	Expectations				Preferences			
	Multivariate		*Univariate*		Multivariate		*Univariate*	
	R^2	%	*R^2*	*%*	Pseudo R^2	%	*Pseudo R^2*	*%*
Age	0.002	1.6%	*0.002*	*1.7%*	0.003	6.1%	*0.005*	*8.6%*
Occupational status	0.001	1.0%	*0.001*	*1.0%*	0.007	12.2%	*0.008*	*14.8%*
Income/wealth	0.008	6.6%	*0.010*	*7.7%*	0.001	1.8%	*0.002*	*3.9%*
Demographic	0.021	16.9%	*0.022*	*17.7%*	0.004	6.4%	*0.005*	*9.7%*
Education	0.008	6.5%	*0.010*	*7.9%*	0.008	14.0%	*0.011*	*19.4%*
Personality	0.004	3.5%	*0.005*	*3.6%*	0.006	11.3%	*0.009*	*16.4%*
Time	0.080	63.9%	*0.082*	*65.2%*	0.027	48.1%	*0.029*	*51.1%*
Total	0.126	100.0%		*104.8%*	0.056	100.0%		*124.0%*

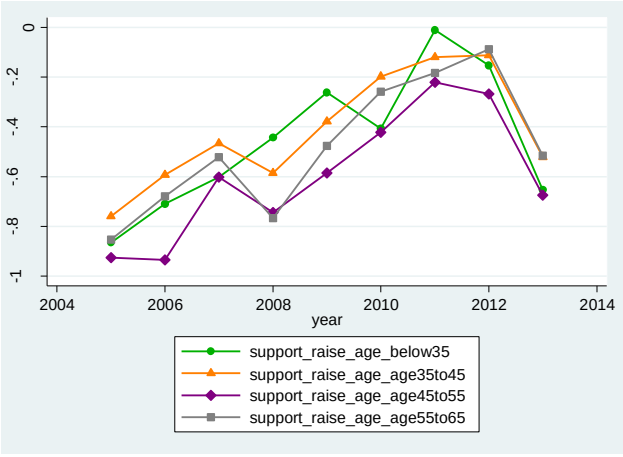
Note: Table is copy of Table 4 (reporting decomposition of the goodness of fit of our baseline multivariate models) complemented with the (contribution to) (pseudo) R^2 of 'univariate' regressions that include the respective set of covariates only. Percentages are R^2 as share of the complete model.

Chart A.1 Year effects by group

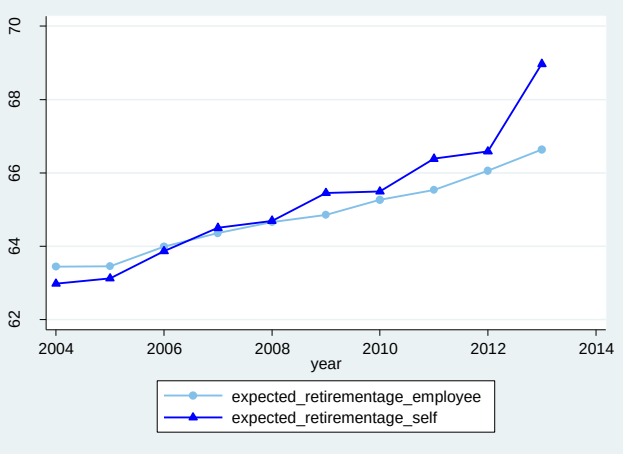
A. Expectations – by age



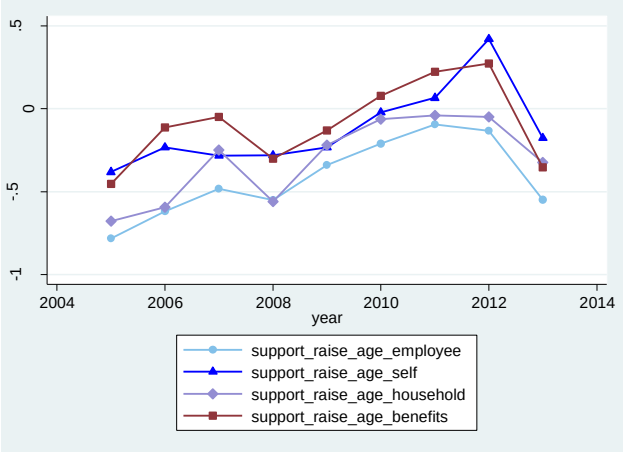
B. Preferences – by age



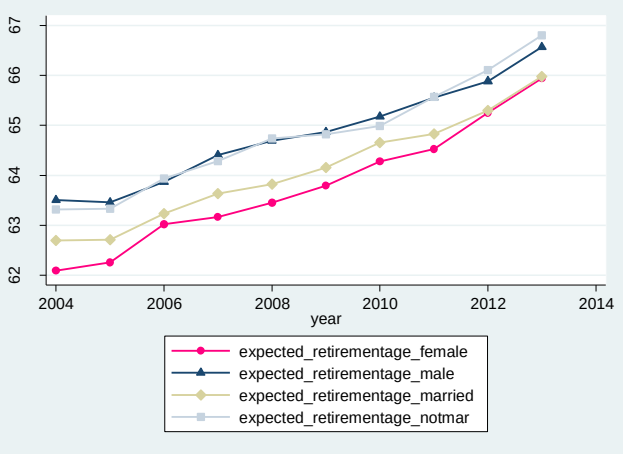
C. Expectations – by employment status



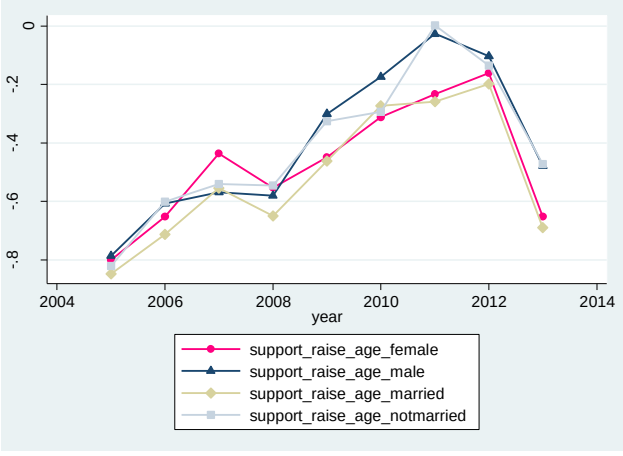
D. Preferences – by employment status



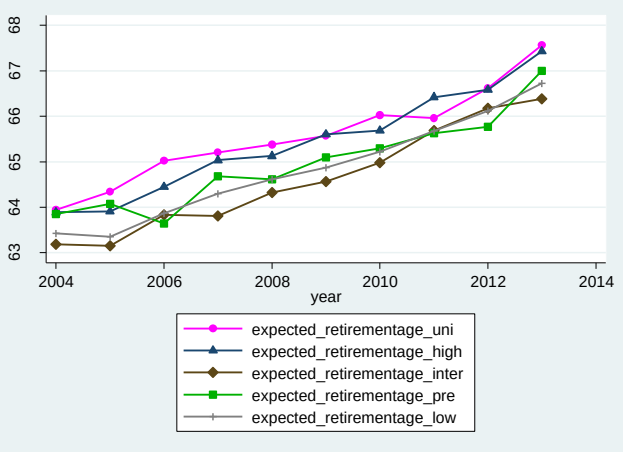
E. Expectations – by demography



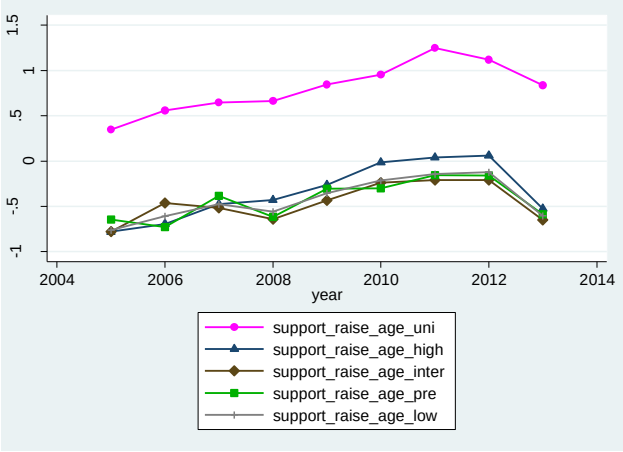
F. Preferences – by demography



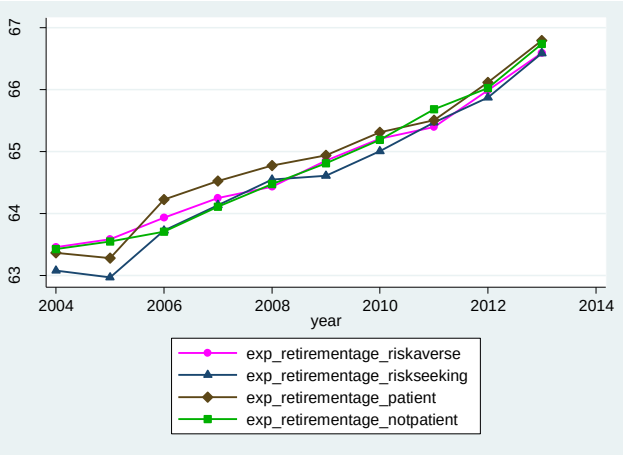
G. Expectations – by education



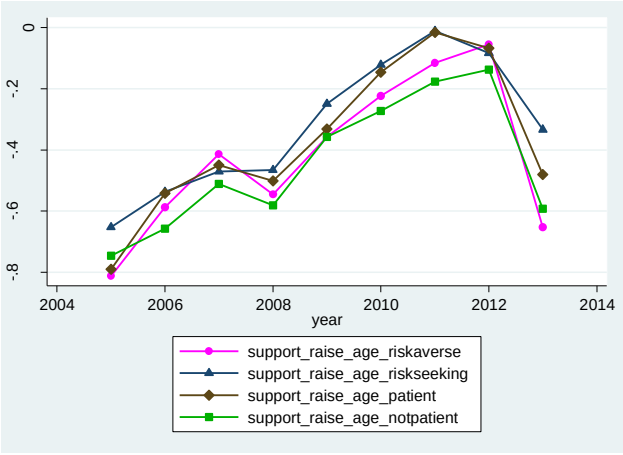
H. Preferences – by education



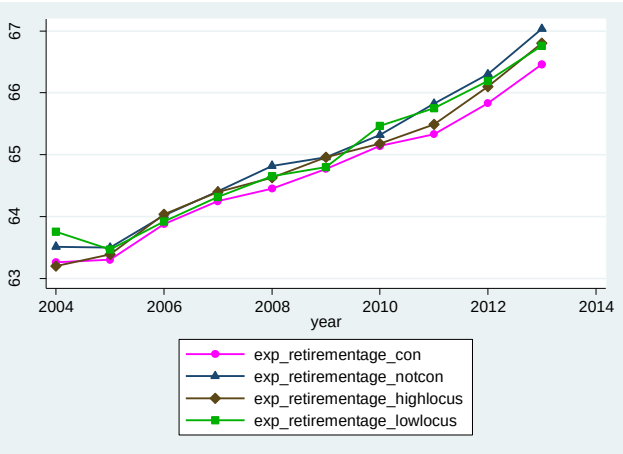
I. Expectations – by economic traits



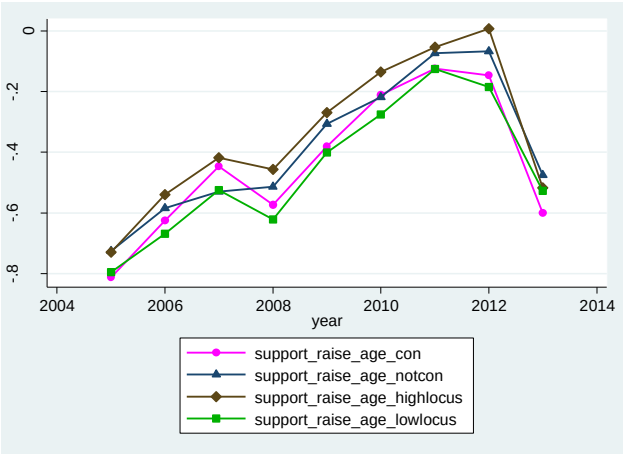
J. Preferences – by economic preferences



K. Expectations – by personality traits

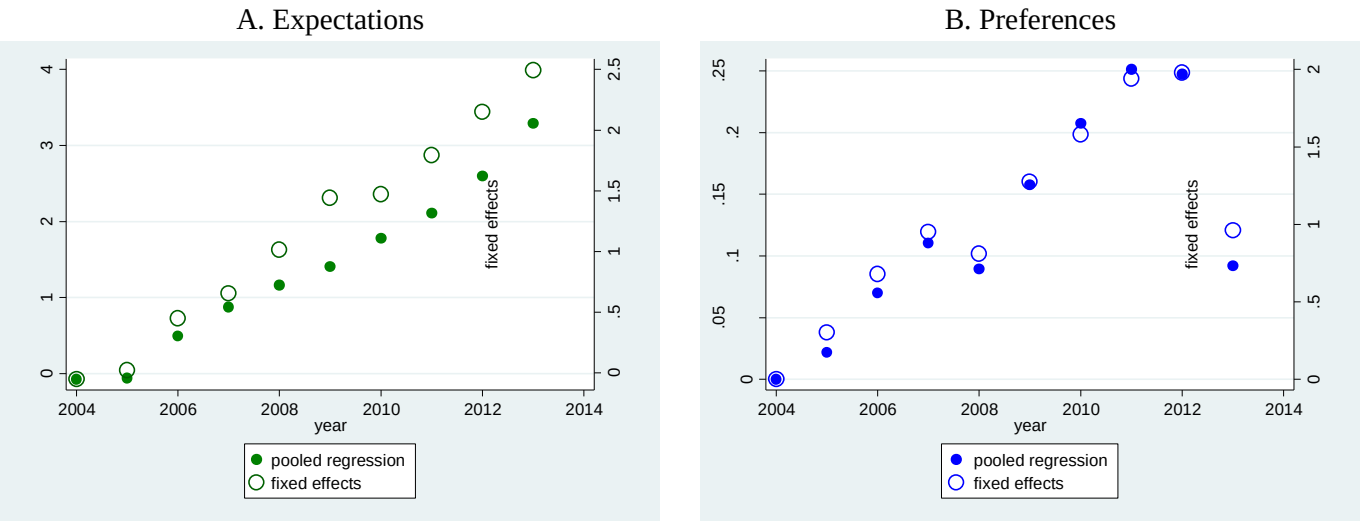


L. Preferences – by personality traits



Note: Left panels shows year coefficients from the regression of the expected age of retirement (2003 is base year), right panels from the probit regression on preferences for AOW reform (2004 is the base year). Our reference respondent is aged 35 to 45, employee, male, low-educated and falls in the first income and wealth quarter.

Chart A.2 Year effects of retirement expectations and preferences – various methods



Note: Panel A shows year coefficients from the regression of the expected age of retirement, panel B from the probit regression on preferences for AOW reform (2004 is the base year). The dark dots in both graphs are identical to those in Chart 6; the lighter dots show the time effects from the panel fixed effects regression (see Section 7). Confidence bands are suppressed to facilitated reading.

Table A.8 Impact frequency of participation (panel regression)

	expected_retirementage	preference_aowage_up
	OLS	conditional logit
	FE	FE
frequency	-0.08	0.09
	(0.08)	(0.06)
N	8717	6881
(Pseudo) R^2	0.095	0.079
Time dummies	Yes	Yes

Note: Table shows the results of a panel fixed effects regression of respondents' expected age of retirement and a conditional logit fixed effects model for respondents´ support for raising the retirement age, focusing on coefficients for the frequency that respondents answered the question on preferences for reform (from 1st time to at maximum the 11th time). In parentheses are standard errors.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Pseudo R^2 of conditional logit model is McFadden's.

Table A.9 Probit versus ordered logistic regression

	(1) preference_aowage_up		(2) aowreform_prefcat	
below35	-0.04	(0.06)	-0.02	(0.08)
age45to55	-0.19***	(0.05)	-0.35***	(0.08)
age55tot65	-0.07	(0.06)	-0.17*	(0.09)
self_employed	0.30***	(0.08)	0.51***	(0.13)
household	0.13	(0.08)	0.23*	(0.12)
benefits	0.32***	(0.06)	0.66***	(0.09)
other	0.06	(0.08)	0.09	(0.12)
incomeQ2	-0.02	(0.06)	-0.10	(0.09)
incomeQ3	-0.04	(0.07)	-0.17*	(0.10)
incomeQ4	-0.04	(0.08)	-0.16	(0.12)
wealthQ2	-0.05	(0.05)	-0.03	(0.07)
wealthQ3	-0.05	(0.05)	-0.02	(0.08)
wealthQ4	-0.09	(0.06)	-0.19**	(0.08)
female	-0.05	(0.04)	-0.08	(0.06)
married	-0.10**	(0.05)	-0.19***	(0.07)
grandchild	0.12*	(0.07)	0.24**	(0.10)
health_standardised	0.06***	(0.02)	0.10***	(0.03)
university	0.32***	(0.07)	0.46***	(0.11)
vocational_high	0.06	(0.06)	0.05	(0.09)
vocational_intermediate	-0.04	(0.07)	-0.10	(0.09)
preuniversity	-0.00	(0.08)	-0.04	(0.12)
riskaversion_standardised	-0.06***	(0.02)	-0.06**	(0.03)
patience_standardised	0.05**	(0.02)	0.07**	(0.03)
conscientiousness_standardised	-0.04**	(0.02)	-0.04	(0.03)
locus_of_control_standardised	0.06***	(0.02)	0.05	(0.03)
N	12176		12176	
Pseudo R^2	0.056		0.038	
Time dummies	Yes		Yes	

Notes: Column 1 shows the results from the probit regression presented in Table 4. Recall that the dummy takes the value of 1 in case the respondent lists raising the retirement age as first option for AOW reform. Column 2 shows results for an ordered logistic regression where the highest number also reflects the strongest support for raising the retirement age (3 is raising the retirement age as first choice, 2 as second choice, 1 as last choice). In parentheses are standard errors. Other than in the Table 3 and Tables 4.1 and 4.2 we here report regression coefficients and *not marginal effects*.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Pseudo R^2 is McFadden's.

Table A.10 Regression results – with and without 2013

	expected_retirementage				preference_aowage_up			
	All years		Without 2013		All years		Without 2013	
below35	-0.48**	(0.23)	-0.56**	(0.24)	-0.01	(0.02)	-0.02	(0.02)
age45to55	-0.19	(0.16)	-0.20	(0.16)	-0.06***	(0.02)	-0.07***	(0.02)
age55to65	-0.21	(0.18)	-0.21	(0.19)	-0.02	(0.02)	-0.04	(0.02)
self_employed	0.35	(0.37)	0.17	(0.37)	0.10***	(0.03)	0.10***	(0.03)
household					0.04	(0.03)	0.04	(0.03)
benefits					0.11***	(0.02)	0.12***	(0.02)
other	-0.52	(0.37)	-0.52	(0.39)	0.02	(0.03)	0.02	(0.03)
incomeQ2	0.16	(0.37)	0.19	(0.39)	-0.01	(0.02)	-0.00	(0.02)
incomeQ3	0.18	(0.37)	0.17	(0.39)	-0.01	(0.02)	-0.01	(0.02)
incomeQ4	-0.36	(0.39)	-0.40	(0.41)	-0.02	(0.03)	-0.01	(0.03)
wealthQ2	-0.15	(0.19)	-0.16	(0.20)	-0.02	(0.02)	-0.01	(0.02)
wealthQ3	-0.41**	(0.19)	-0.47**	(0.20)	-0.02	(0.02)	-0.01	(0.02)
wealthQ4	-0.77***	(0.19)	-0.80***	(0.20)	-0.03	(0.02)	-0.03	(0.02)
female	-1.01***	(0.15)	-1.05***	(0.16)	-0.02	(0.01)	-0.01	(0.02)
married	-0.73***	(0.16)	-0.74***	(0.17)	-0.03**	(0.02)	-0.03*	(0.02)
grandchild	0.12	(0.23)	0.16	(0.23)	0.04*	(0.02)	0.04*	(0.02)
health_standardised	0.20***	(0.08)	0.20**	(0.08)	0.02***	(0.01)	0.02***	(0.01)
university	0.78***	(0.25)	0.82***	(0.26)	0.11***	(0.02)	0.10***	(0.03)
vocational_high	0.57***	(0.22)	0.58***	(0.23)	0.02	(0.02)	0.02	(0.02)
vocational_intermediate	-0.17	(0.22)	-0.15	(0.23)	-0.01	(0.02)	-0.01	(0.02)
preuniversity	0.24	(0.29)	0.26	(0.30)	-0.00	(0.03)	-0.00	(0.03)
riskaversion_standardised	0.12*	(0.07)	0.12*	(0.07)	-0.02***	(0.01)	-0.02***	(0.01)
patience_standardised	0.07	(0.08)	0.08	(0.09)	0.02**	(0.01)	0.02**	(0.01)
conscientiousness_standardised	-0.17***	(0.07)	-0.16**	(0.07)	-0.01**	(0.01)	-0.01*	(0.01)
locus_of_control_standardised	-0.13	(0.08)	-0.13	(0.09)	0.02***	(0.01)	0.02***	(0.01)
_cons	63.45***	(0.49)	63.51***	(0.51)				
N	8103		7459		12176		11138	
R^2	0.126		0.102		0.056		0.058	
Time dummies	Yes		Yes		Yes		Yes	

Notes: In parentheses are standard errors. Columns 3 and 4 report marginal effects.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Pseudo R2 is McFadden's.

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