

## Save more or retire later?

Retirement planning heterogeneity  
and perceptions of savings adequacy  
and income constraints

*Ron van Schie  
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Bas Donkers*





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DESIGN PAPER 60

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June 2016

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# SAVE MORE OR RETIRE LATER?

## **Abstract**

Many individuals do not contribute sufficiently towards their pension savings to support an income level at their planned retirement age that ensures their desired standard of living. There are two main strategies that they can follow to overcome the resulting gap: they can either increase their savings or plan to retire later. While most previous research has investigated the intentions of individuals to use one of these strategies separately, in this study we investigate how intentions to follow these separate strategy may be interrelated. In particular, we argue that lower perceived savings adequacy will increase the savings intentions of individuals, but that, depending on the level of their perceived current income constraints, they either form stronger intentions to save more (if they perceive weak income constraints) or to retire later (if they perceive strong constraints). Results from an online survey among 1,472 working individuals in the Netherlands provide support for the predicted effects.

To deepen our understanding of the drivers of individual perceptions of savings adequacy and income constraints, we further analyze whether two groups in the sample, who are strongly at risk of not saving enough for retirement, do indeed differ in their perceptions and follow different planning strategies depending on their financial situation. The findings support the proposed relations.

With different individuals relying on different strategies to avoid an unwanted level of pension income, either by saving more or by retiring later, pension communication can be improved by ensuring that the information that is provided is aligned with the strategy that the individual pursues. As our two focal groups also tend to rely on different information channels, the content of these channels can be tailored to the information needs of the typical user. More generally, the presence of systematic differences in the retirement planning strategy that individuals follow makes it important to account for the heterogeneity in planning strategies of individuals when designing communication policies to further stimulate their retirement planning.



## 1. Introduction

Recent pension forecasts in the U.S show that about half of the working population is at risk of not saving enough to maintain their standard of living once they retire (Munnell et al., 2014). Similar projections have been made for other countries such as the Netherlands (Knoef et al., 2014). To remedy a projected drop in income after retirement, individuals can increase their current pension savings. However, as an alternative strategy they can also plan to retire later, which allows them to build up their pension savings for a longer period of time. Policymakers have also recognized the importance of this second approach to increasing retirement income, and in the past few years many governments have implemented policies to promote later retirement by making it financially less attractive to retire early (Bloomberg Business, 2010; OECD, 2006, p. 94). Planning to retire later is thus increasingly becoming an important alternative strategy towards obtaining a higher retirement income (Bloomberg Business, 2014).

Behaviorally, it is well known that individuals who do not save enough for retirement rarely adjust their savings levels to increase their projected retirement income (e.g., Choi et al., 2002). This can be explained in part by the fact that individuals do not actively think about their retirement (Lusardi & Mitchell, 2007a) and that they tend to postpone the actions that are necessary to adjust their savings (Thaler & Benartzi, 2004). In this paper we propose an additional explanation: that individuals plan to retire later as an alternative strategy to overcome their inadequate savings level. Until now, there has been little research to establish to what extent individuals utilize the different strategies of saving more versus retiring later in their planning to ensure an adequate income level at retirement. The objective of this study is to

investigate whether individuals take advantage of both strategies and, if so, how their use of these strategies may be related. Understanding what strategies are used by individuals in planning for their retirement is important for all stakeholders involved in improving the pension preparedness of the population, including governments, pension funds, financial advisors, and providers of third pillar pension products.

Previous research has typically focused on single retirement planning strategies to overcome inadequate retirement savings. For example, with respect to savings intentions, Choi et al. (2002) found that many individuals who were aware of that they saved too little increased their savings intentions (although few actually started saving more). Van Schie, Donkers and Dellaert (2012) found that the savings intentions of individuals depend on pension income uncertainty as well as on their current financial situation, and Wiener and Doescher (2008) provided a framework suggesting that the concerns of individuals about low levels of retirement income only lead them to start saving more when they believe that they are able to save more. Other studies have investigated the intentions of individuals to retire earlier versus later and have found a significant negative effect of being better financially prepared for retirement on planned retirement age (Adams, 1999; Montalto et al., 2000). However, Taylor and Shore (1995) surprisingly found that the belief of individuals that they would be financially uncomfortable in retirement did not affect their planned retirement age.

In the current paper we address both the savings intentions of individuals and their intentions to retire later. In line with previous research, we predict that lower perceived savings adequacy will lead individuals to intend to save more. However, we predict that, depending on their perceived income constraints,

they either form stronger intentions to save more (if they perceive weak income constraints) or to retire later (if they perceive strong income constraints). This prediction represents a cross-over between recent findings in the area of savings intentions (Van Schie et al., 2012; Wiener & Doescher, 2008) and retirement age planning (Taylor & Shore, 1995). We test the proposed effects in an online survey amongst 1,472 working individuals in the Netherlands.

Understanding these predictable differences in the retirement planning strategies of individuals can improve the effectiveness of pension communication. In the discussion section, we investigate a possible segmentation of individuals that directly links to the expected benefits that can be achieved in terms of increased pension savings. We also provide preliminary evidence that groups of individuals who differ in their preferred retirement planning strategy also rely on different information channels; this suggests that some channels could benefit from a stronger focus on suggesting to increase pension savings, while other channels could pay more attention to, for example, continued education to increase the opportunity to work longer.

## 2. Theory

### 2.1 Saving more as a strategy to overcome inadequate retirement income

In most countries, a substantial part of the population is at risk of not saving enough to retire comfortably (e.g., Kim et al., 2013; Helman, 2015). In the US for example, about 40% of workers are not confident of their ability to retire comfortably (Helman, 2015). Similarly in the Netherlands, more than 25% of Dutch workers are worried that they do not save enough to maintain their standard of living after retirement (Wijzer in Geldzaken, 2014). As a result, communicating to individuals that they should increase their savings has been proposed as a strategy to promote the accumulation of adequate levels of retirement income (Wiener & Doescher, 2008).

Previous research has linked socio-demographic and psychological characteristics to various retirement planning activities and outcomes, such as total accumulated retirement wealth (Lusardi & Mitchell 2007a), how much an individual thinks about retirement (Van Rooij et al., 2011), current savings contributions (Hershey et al., 2007), and contribution rates in the last twelve months (Stawski et al., 2007). While these studies show that certain individuals or groups of individuals do not prepare optimally for retirement, they do not address the question of how and whether individuals who know that their current saving behavior is suboptimal plan to respond to this perceived lack of pension savings.

Several studies have investigated the intentions of individuals to save (or to save more) for retirement (Croy et al., 2010a, 2010b; Davis & Hustvedt, 2012; Wiener & Doescher, 2008, p. 138), but only few studies have so far addressed the relation between savings intentions or behavior and perceived savings adequacy.

Choi et al. (2002) found that, while two-thirds of working employees knew that they were not saving enough, only a small fraction of employees actually increased their savings contributions in the next several months. Van Schie et al. (2012) showed that low perceived savings adequacy has a positive effect on the intention of individuals to start saving more, but only when they are sufficiently certain about the inadequacy of their retirement savings and have the financial ability to save.

## **2.2 Retiring later as a strategy to overcome inadequate retirement income**

Another strategy for individuals to deal with inadequate retirement savings is to continue working longer and to retire later, and thus to contribute more towards their retirement savings and to commence the depletion of their retirement savings at a later point in time. Individuals can, for example, choose to continue to work in their career employment (e.g., Feldman, 1994) or to engage in alternative employment that bridges between their regular career and retirement (e.g., Kim & Feldman, 2000; Wang et al., 2008). Most previous research on retirement age planning of individuals has shown that financial concerns may withhold them from retiring earlier (Wang & Shi, 2014). Individuals with fewer accumulated financial resources and lower perceptions of the adequacy of these resources are more likely to postpone retirement (Gruber & Wise, 1999).

In line with this finding, retirement decisions are found to be heavily influenced by financial incentives (Euwals et al., 2010). It is interesting to note that individuals often retire as soon as they become eligible for (early) retirement benefits (Kapteyn & De Vos, 1999), which assures them of a secure level of income after retirement. Previous research suggests that individuals generally wish

to retire earlier, but often lack the financial resources to do so. For example, Ekerdt et al. (1980) found that American male workers generally preferred to retire sooner than they were planning to do, indicating that their preferred retirement age was tempered by financial concerns. Also across a number of European countries, many workers were found to ideally wish to retire earlier than they expected to be able to do financially (Esser, 2006).

Interestingly, not all previous research found significant (positive) effects of lower perceived savings adequacy on planned retirement age (Taylor & Shore, 1995; Van Dam et al., 2000). Taylor and Shore (1995) suggest that this can occur because finances become important only as one gets closer to retirement. This explanation is supported by the finding of Van Schie, Dellaert and Donkers (2015) that financial feasibility only becomes a primary concern to individuals as they approach their retirement age.

### **2.3 Joint planning for how much to save and when to retire**

From previous research it is not clear yet how individuals jointly plan to increase their pension savings and/or to increase their pension retirement age (or not). In particular, little is known about whether individuals who perceive their pension savings to be inadequate and who do not plan for additional savings adjust their planned retirement age. Similarly, it is not clear whether individuals who do not plan to retire later in response to inadequate savings might plan to increase their savings instead.

Studies that take into account both the intentions of individuals to save more and to retire later are scarce. In research on retirement savings adequacy, the interplay between retirement age and savings is only taken into account indirectly (e.g., Mitchell & Moore, 1997; Skinner 2007; Yuh et al., 1998), meaning that the amount one needs to save, to ensure that current savings

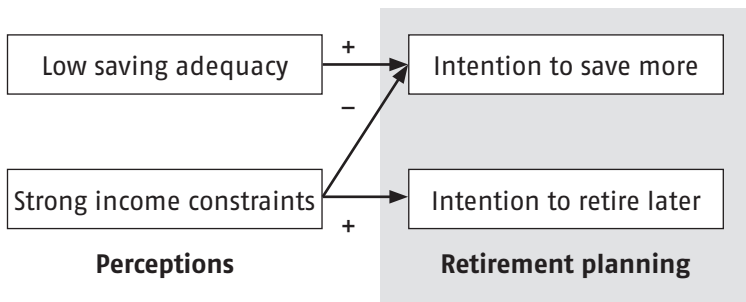
are adequate, is conditional on the expected or presumed retirement age. For example, Mitchell and Moore (1997) explore how much individuals need to save extra to retire comfortably when retiring at the age of either 62 or 65. Yuh, Montalto and Hanna (1998) analyzed whether individuals have adequate wealth for retirement at their planned retirement age and showed that those with a higher planned retirement age were more likely to have adequate retirement wealth. However, these studies did not address whether individuals intend to save more or retire later in response to their perception of having a retirement savings gap.

When we examine the relation between the intentions of individuals to increase their pension savings and their intentions to increase their pension retirement age in response to an anticipated gap in retirement income, we predict that they prefer to solve this problem by saving more rather than by postponing their retirement date. Indeed, while the willingness of workers to work longer has slowly increased in the last decade, the overall willingness to work longer is still low (Cuelenaere & Chotkowski, 2008). For example, in the Netherlands, workers are on average willing to continue working until the age of 62, while they expect to retire at the age of 64. Therefore we predict that the strategy of individuals to retire later is subordinate to a strategy of saving more. We thus hypothesize that low perceived retirement savings adequacy has an effect on savings intentions but not on the intention to retire later.

**H1:** Lower perceived retirement savings adequacy increases the intention to save more for retirement.

However, in addition we propose that an individual's current financial situation is likely to be an important factor in deciding

Figure 1. Conceptual model



between saving more or retiring later. Van Schie et al. (2012) found that individuals only intend to save more when they are financially able to do so. Likewise, an individual's concerns about low levels of retirement income or an individual's perceived benefits associated with increasing his or her saving level only have a positive effect on the likelihood that such person will start saving more when that person thinks that he or she has the ability to save more (Wiener & Doescher, 2008). We extend this line of reasoning to predict that when individuals face strong income constraints, they will lower their intention to save more for retirement. At the same time, they will have to look for other ways to safeguard an adequate retirement income level. Hence we hypothesize that those individuals instead will plan for a later retirement age (see Figure 1, which summarizes the hypothesized relations).

**H2a:** Stronger perceived income constraints increase the intention to retire later.

**H2b:** Stronger perceived income constraints decrease the intention to save more for retirement.



### **3. The impact of perceived savings adequacy and income constraints on retirement planning**

In order to test whether individuals choose different planning strategies to assure themselves of an adequate level of income after retirement, a distinction is made between two planning strategies, namely saving more or retiring later.

#### **3.1 The retirement situation in The Netherlands**

Since we use a Dutch sample to study how the perceptions of individuals of their retirement savings adequacy and income constraints affect their planned retirement behavior, we first provide a short description of the pension system in the Netherlands. The Dutch system is known for its broad coverage; in addition to a pay-as-you-go state pension scheme (AOW), under which individuals are eligible to receive monthly payments after they reach the eligible age, more than 95% of the employed population is covered by quasi-mandatory occupational pension plans (Ministry of Social Affairs and Employment, 2011). Still, a substantial group of workers is at risk of not saving enough (Wijzer in Geldzaken, 2014), for example because they have accumulated lower pension benefits due to periods of part-time work or of unemployment, or not being entitled to an occupational pension plan.

Like in many other countries, the Dutch pension system is undergoing certain changes. In the last decade, the Dutch government has taken measures to make early retirement less attractive financially (e.g., Euwals et al., 2010; Van Oorschot, 2007) and decided to raise the official state pension (AOW) age gradually from 65 to 67 by the year 2021, after which it will be raised further based on the average life expectancy (The Actuary, 2014; The

Economist, 2014). These reforms have made early retirement more expensive for workers, first because they will only be provided with a state pension (AOW) after reaching the official pension age, which for many workers is the biggest part of their pension income (Ministry of Social Affairs and Employment, 2011), and second because occupational pensions are lowered for every year that workers begin drawing on their pensions earlier. The reasons for this are that, by retiring earlier, workers contribute fewer years to their pension plans, and that the pension plans need to pay out the accumulated resources over more years. If, on the other hand, a worker decides to retire later, his or her pension is raised (up to a certain legal maximum) for every year that he or she retires later.

### **3.2 Method**

#### *Sample*

A total of 1,472 panel members from a Dutch online research panel run by Multiscope, a professional marketing research agency, qualified for participation in the study. Data were collected in 2011. Respondents from the panel were selected from a very large potential pool of participants, on the basis that they were nationally representative as to age and gender within the age group of 25 to 65 years and the main wage earner, and working as an employee, or unemployed, or full or partially disabled. Furthermore, we only included respondents who reported that they planned to retire no earlier than 14 years before and no later than 14 years after the state pension (AOW) age and that took the survey task seriously.<sup>1</sup> In total, of the 2,677 respondents who

1 Exclusion criteria for not answering the survey task seriously: we excluded respondents who gave the same answer for 23 statements, those who were likely to have filled it in twice (i.e., same user ID has more than one

started the survey, 2,372 completed it (89%). After screening on the various criteria, this resulted in a qualifying sample of 1,472. The average age of the respondents was 48 years, 62% were male, 62% had a partner, and the median net household income was between EUR 2,000 and 3,000 per month (see Appendix 1 for details). Thus, while the sample is not representative on all dimensions of the full Dutch population, it consisted of wide mix of individuals from different income groups.

### *Dependent variables*

*Additional savings intention* – Individuals were asked the next question on a seven-point scale, ranging from 'certainly not' to 'certainly': "In the next 12 months, do you expect to make extra contributions in order to supplement your income after retirement?"

*Planned retirement age* – To measure an individual's planned retirement age, we adopted two questions from Van Schie et al. (2015) to gauge the difference between participants' planned retirement age and the age at which they expected to become eligible for state pension (AOW). We measured planned retirement age using the following two-digit open-ended question: "Considering that you now have to indicate at what age you will retire, what age would that be?" To measure expected state pension (AOW) age, respondents answered the following two-digit open-ended question: "At what age do you expect to begin receiving AOW?" We formed a composite planned retirement age scale by subtracting the respondent's expected state

completed survey, same user ID opened another version of the survey before completing this version, or users with same IP address in combination with the same age and gender), those who answered the questionnaire in less than 5 minutes or who did not complete the survey, and those who answered "don't know" to the question whether they had an employer pension plan.

pension (AOW) age from the respondent's planned retirement age. This was done to correct for (anticipated) changing state pension regulations, as a driver for later retirement in this study. A positive value on our composite scale implies that a respondent expects to work beyond the official state pension age.

#### *Independent variables*

*Perceived savings inadequacy (urgency to save)* – Perceived savings inadequacy was measured (after reverse coding) using a five-point scale ranging from 'totally inadequate' to 'totally adequate' (adopted from Van Schie et al., 2012): "Based on how you expect to live in retirement and given that you do not adjust your current saving behavior, do you expect to have adequate financial resources to retire comfortably?"

*Perceived income constraints* – Perceived income constraints were measured (after reverse coding) using the following question: "When you think of the next 12 months, how well do you think you can get by on the total income of your household?" with answers on a five-point scale ranging from 'it is very hard' to 'it is very easy'.

### **3.3 Results: Estimation of the conceptual model**

On average, respondents in our sample planned to retire at the age of 64.2, which is 1.7 years before the age at which they expect their state pension to commence, and the average strength of their additional savings intention is 2.5 (on a 7-point scale from 1 'certainly not' to 7 'certainly'). In total, 191 respondents (13%) thought it would be 'hard' or 'very hard' to get by on their income in the next 12 months, and 534 respondents (36%) expected their financial resources for retirement to be a bit or totally inadequate.

Table 1. The effects of perceptions on retirement planning<sup>§</sup>

Dependent variable	Retirement planning			
	Savings intention		Planned retirement age	
	$\beta$	p	$\beta$	p
<b>Perceptions</b>				
Low savings adequacy	.200	.000**	.029	.297
Strong income constraints	-.109	.001**	.100	.002**
<b>Controls</b>				
Age	.003	.289	.014	.000**
Partner	-.025	.695	-.075	.221
Gender (female)	-.049	.453	-.061	.331
No. of observations		1472		1472
Pseudo R-square (Cox and Snell)		.032		.028

§ Ordered probit model estimates

\*\* p < .01; \* p < .05

To verify the proposed relations (see Figure 1), we estimated two ordered probit models, the first to determine the effects of respondents' perceptions of savings inadequacy and income constraints on their additional savings intentions, and the second for the effects of these perceptions on planned retirement age (Table 1)<sup>2</sup>. The reason for using ordered probit models is that our dependent variables are ordinal in nature. This not only applies for the answer scale used for savings intentions but also for planned retirement age, because a deviation of one year from the

- In the survey, respondents who completed the questionnaire were randomly assigned to one of three conditions. Respondents in two conditions received a priming task that asked them to explain why or how a person would engage in six particular activities; the other group did not receive this task. In our analyses we combined responses across all conditions and controlled for the main effect of condition by including a dummy variable for each group. These dummies had no significant impact on the dependent variables in the analyses, and there was no significant interaction of condition with the effect of the two perceptions.

official state pension age is likely to loom much larger to individuals than further incremental extra years. We included gender, age and partner (yes vs. no) as control variables in the model estimation<sup>3</sup>.

As expected, we found that low perceived savings adequacy had a positive effect on savings intention ( $\beta = .200$ ;  $p < .01$ ) and no effect on planned retirement age ( $\beta = .029$ ; not significant (n.s.)). The effects of perceived current income constraints were also as expected. Stronger perceived current income constraints significantly reduced the savings intentions of individuals ( $\beta = -.109$ ;  $p < .01$ ) and increased their planned retirement age ( $\beta = .100$ ;  $p < .01$ ).

Since the reported coefficients of the ordered probit models are somewhat difficult to interpret, we facilitate interpretation by computing the average effect of a one-unit change in the latent variable on the predicted value of the dependent variable. For savings intention, we find that a unit change in the latent variable of the ordered probit model corresponds to a 1.55 point shift in the savings intention scale. This means that the  $\beta$  coefficient of .200 for the effect of perceived savings inadequacy implies a 0.310 item scale point shift in savings intentions per unit change (item scale point) in the independent variable, and that the  $\beta$  coefficient of  $-.109$  for perceived current income constraints implies a  $-0.169$  item scale point shift in savings intentions per unit change (item scale point) in the independent variable. For planned retirement age, we find that a unit change in the latent variable of the ordered probit model corresponds to a 1.35 year shift in the planned retirement age. Hence, the  $\beta$  coefficient of .100 for the effect of perceived current income constraints on

3 We also tested for the effect of including age and income as further control variables and found that this did not change the significance of the results.

planned retirement age implies a 0.135 year (or 1.62 months) shift in retirement age per unit change (item scale point) in the independent variable.

### **3.4 Results: Implications for two vulnerable groups**

To deepen our understanding of the drivers of individual perceptions of savings adequacy and current income constraints, and to replicate our results for objectively verifiable vulnerable groups in our sample, we investigate in this section whether two different groups who are at risk of saving inadequately do indeed follow different planning strategies depending on their financial situation. To do so, we focus on two groups of individuals who are highly at risk of preparing inadequately for retirement and who differ in terms of their current financial situation. The first group consists of individuals who involuntarily do not work, due to current unemployment or disability. We expect that individuals in this group face strong current income constraints and that they are currently not financially able to save more. According to a recent study by Knoef et al. (2014), individuals who faced disability or unemployment for at least two years have relatively lower pension annuities and are more likely to reach retirement with insufficient replacement rates.

The second group that we study are individuals who are employed but not covered by an occupational pension plan. These individuals, who represent a small subgroup of all Dutch employees, are responsible for their own retirement savings and are more likely to save inadequately for their retirement (Helman, 2015). They do have a job and hence are likely to be able to save more for retirement.

The first question in this analysis is whether these groups, which can be regarded as objectively different from the general

population in terms of accumulating inadequate retirement resources, are also (subjectively) aware of a potential retirement savings gap. The second question of interest is whether they apply different strategies, depending on their current income constraints, to secure an adequate level of retirement income. While we expect that both groups believe that they are at risk of saving inadequately, we also expect that the perception of saving inadequately only becomes a significant predictor of retirement savings intentions when perceived income constraints are weak. Contrarily, when perceived income constraints are strong, we expect that individuals plan to postpone their retirement age. We aim to test how these two vulnerable groups differ in their perceptions and retirement planning behavior, and to what extent perceptions mediate their retirement planning behavior.

*The effects of currently not working or not participating in a pension plan*

We used the following measures to classify the two vulnerable groups in our sample:

*Currently not working* – In the questionnaire, respondents who are not employed were asked an open-ended question as to their main occupation. Based on these open answers, we coded the respondents that were unemployed or (partly) disabled with a dummy variable for our analysis. Thus, we obtained a dummy variable indicating whether individuals are currently unemployed or disabled (vs. employed).

*No pension plan participation* – Respondents were asked to answer the following question: “Does your current job entitle you to a retirement income (apart from the state pension (AOW)? (yes/



no)" Respondents who replied "no" were coded with a dummy variable.

Based on these variables, 47 respondents in our sample were classified as currently not working (unemployed/disabled) and 72 respondents as not participating in an employer pension plan. As expected, we found that both groups have lower pension savings adequacy than the mean of the total sample (mean of total sample = 3.07, SD = 1.11; mean of no pension plan group = 3.67, SD = 1.21; mean of currently not working group = 3.51, SD = 1.21). Only the group that currently does not work experiences stronger perceived income constraints (mean of total sample = 2.50, SD = 0.95; mean of no pension plan group = 2.87, SD = 1.17; mean of currently not working group = 3.62, SD = 1.07).

We estimated ordered probit models to study the direct effects of currently not working and of not participating in an employer pension plan on respondents' perceptions and planning behavior. The results are shown in Table 2 in the model for perceptions and in model 1 for retirement planning. In the model for respondents' perceptions we found, as expected, that currently not working ( $\beta = .380$ ;  $p < .05$ ) and not having an employer pension plan ( $\beta = .519$ ;  $p < .05$ ) both have a positive effect on individual perceptions of saving inadequacy compared to the other individuals in the sample. Contrarily, only individuals who currently do not work perceive themselves to be more financially constrained ( $\beta = 1.239$ ;  $p < .05$ ).

Concerning respondents' retirement planning intentions we found, also in line with our expectations, that respondents who currently do not work do not intend to save extra (n.s.) but expect to retire later ( $\beta = .359$ ;  $p < .05$ ). Respondents with no employer

Table 2. Perceptions and retirement planning for two vulnerable groups<sup>§</sup>

Dependent variable	Perceptions			
	Low savings adequacy		Strong income constraints	
	$\beta$	p	$\beta$	p
<b>Vulnerable groups</b>				
Currently not working (unemployed/disabled)	.380	.019*	1.239	.000**
No pension plan participation	.519	.000**	0.151	.253
<b>Perceptions</b>				
Strong income constraints				
Low savings adequacy				
<b>Controls</b>				
Age	-.014	.000**	0.000	.993
Partner	-.154	.013*	-0.242	.000**
Gender (female)	.072	.258	0.043	.505
No. of observations		1,472		1,472
Pseudo R-square (Cox and Snell)		.047		.061

§ We control for the different conditions in the questionnaire, see footnote 3.

\*\* p < .01; \* p < .05

pension plan, on the other hand, have a higher savings intention ( $\beta = .297$ ;  $p < .05$ ) but do not plan to retire later (n.s.)<sup>4</sup>.

To allow better interpretation of these estimation results, we again computed the effects of a unit change in the latent variable in the ordered probit model on the predicted expected value of the outcomes in terms of savings intention and planned

4 When we control for age and income in the estimations, all effects are unaffected except for two relationships, namely the impact of currently not working on low savings adequacy ( $p=.192$ ) and the impact on planned retirement age ( $p = .055$ ). This can most likely be explained by the inherent correlation between being in the vulnerable group of not working plus having a relatively low income.

Retirement planning									
Model 1					Model 2				
Savings intention		Planned retirement age			Savings intention		Planned retirement age		
$\beta$	p	$\beta$	p		$\beta$	p	$\beta$	p	
-0.236	.166	0.359	.024*		-0.193	.266	0.252	.121	
0.297	.026**	0.204	.116		0.226	.093	0.181	.165	
					-0.104	.002**	0.088	.006**	
					0.196	.000**	0.026	.349	
0.001	.835	0.013	.000**		0.004	.244	0.013	.000**	
-0.024	.711	-0.090	.137		-0.018	.778	-0.069	.260	
-0.040	.541	-0.053	.390		-0.051	.442	-0.059	.346	
	1,472		1,472			1,472		1,472	
	.004		.024			.034		.032	

retirement age. They are 1.59 and 1.35 for savings intention and planned retirement age, respectively, and do not differ between models 1 and 2. The resulting values for the marginal effects of the independent variables are shown in Table 3.

*Mediation analysis*

Next, we analyzed whether the direct effects of the vulnerable group on retirement planning (see Table 2, retirement planning – model 1) are mediated by the differences in perceived savings adequacy and income constraints between these groups.

Therefore, we conducted a mediation analysis to directly test

*Table 3. Marginal effects of model estimates*

Dependent variable	Retirement planning			
	Model 1		Model 2	
	Savings intention	Planned retirement age	Savings intention	Planned retirement age
<b>Vulnerable groups</b>				
Currently not working (unemployed/disabled)	n.s.	0.48	n.s.	n.s.
No pension plan participation	0.47	n.s.	n.s.	n.s.
<b>Perceptions</b>				
Strong income constraints	-	-	-.17	.14
Low savings adequacy	-	-	.26	n.s.

these predictions, following the guidelines of Baron and Kenny (1986). To do so, we estimated a third model, which includes both perceptions and group membership as independent variables (see Table 2, retirement planning – model 2).

We already observed that, for individuals who currently do not work, the effect of the independent variable (currently not working) on the dependent variable (planned retirement age) is significant, and that the effect of the independent variable (currently not working) on the mediator (strong income constraints) is also significant. Next, we jointly estimate the effect of the mediator (strong income constraints) and the group membership variable (currently not working) on the dependent variable (planned retirement age). This analysis reveals a significant effect of strong income constraints ( $\beta = .088$ ;  $p = .006$ ) and insignificant influence of low savings adequacy. Importantly, the effect of currently not working is no longer significant ( $\beta = .252$ ;  $p = .121$ ). This provides strong support for a mediating role of perceptions, especially of perceived income constraints.

Stated differently, the differences in perceptions of these two groups fully explain the difference in their retirement plans.

Second, for individuals who have no employer pension plan we follow a similar approach. Again, we had already observed that the effects of the independent variable (no pension plan participation) on the dependent variable (savings intention) and on the mediator (low savings adequacy) are significant. We also regressed the dependent variable (savings intention) on the mediator (low savings inadequacy) and the independent variable (no pension plan participation). This analysis revealed significant effects of low savings adequacy ( $\beta = .196$ ;  $p = .000$ ) and of strong income constraints ( $\beta = -.104$ ;  $p = .002$ ). The effect of no pension plan participation was no longer significant at 5% ( $\beta = .226$ ;  $p = .093$ ). This again provides support for the mediating effect of perceptions. It is worth noting that strong income constraints do not mediate the relation between no pension plan participation and savings intention, as the effect of no pension plan participation remains significant ( $\beta = .298$ ;  $p = .026$ ) when strong income constraints are included as the only perception in the model.

In summary, our analysis of the two vulnerable groups provides further support for our hypotheses. The results show that individuals who currently do not work plan to retire later but not to save more, and that they do so because their retirement planning is driven by their perceived strong income constraints in combination with a low savings adequacy. For individuals who do not participate in an employer pension plan, retirement planning is different, as they intend to save more for their retirement but do not plan to retire later. This difference is only driven by their perceptions of low savings adequacy, as they do not face stronger income constraints (compared to the individuals in the reference group).

## **4. Discussion**

### **4.1 Theoretical contribution**

Previous research has mainly focused on the intentions of individuals to save for retirement and to plan for a certain retirement age as separate decisions and has not considered them as a joint decision process (Knoll, 2011; Schalk et al., 2010, p. 86). In this paper, we have investigated these two different intentions simultaneously. By accounting for both strategies, we have been able to provide deeper insight into how the two are jointly decided upon. In particular, our results show that individuals have as a primary strategy to save more for retirement if they perceive their future retirement income to be too low. However, if their current income constraints are strong, they use planning to retire later as an alternative strategy. This shows that individuals tend to adjust their plans in a meaningful way by intending either to save more or to retire later, suggesting that their retirement planning is fairly well aligned with economic principles.

In the last two decades, research in economic psychology and behavioral economics has made clear that human beings are not always rational and well-informed agents that make sound financial retirement plans. For example, people often do not have complete information, for example due to a lack of financial knowledge (Lusardi and Mitchell, 2007b), and that may withhold them from considering their future retirement situation (Van Rooij et al., 2011) and from even attempting to plan for retirement (e.g., Knoll, 2010, p. 4). By studying the retirement planning of individuals in two vulnerable groups (those who are currently unemployed and those who are not covered by an employer pension plan), we find that they are aware of the fact that their retirement savings are inadequate. Moreover, applying

a mediation analysis, we highlighted the dampening effect of current income constraints on the intention to save more for retirement, but simultaneously these income constraints induce people to plan to retire later. With their preferred retirement planning strategy being infeasible, they shift to the second best option, that of retiring later. Future research could examine what other behavioral factors can induce individuals to shift between the various strategies that aid in improving the adequacy of their anticipated retirement income.

#### **4.2 Managerial contribution**

From a managerial and public policy perspective, our results provide valuable insights for pension communication. We find that individual pension participants are heterogeneous and that they rely on different strategies when planning for retirement. Therefore, communications may benefit from selecting segments of individuals that are likely to plan to prepare for their retirement in a similar way. These communications may, for example, be based on factors such as the current financial situation of a person, because this allows for customization of segment-specific messages, containing information that is aligned with the intentions of the recipients. Generalizing from our results, we propose the conceptual classification for pension communication purposes shown in Figure 2. This classification shows the expected benefits and likely consequences of communication towards different segments. Note that this classification may be based on a broader set of causes or vulnerable groups than those examined in this study. For example, divorce is also a well-known cause of low pension savings adequacy.

In particular, different groups of individuals are best approached with different messages, particularly messages that

Figure 2. Segments for retirement communications

		Savings adequacy	
		Low	High
Perceived income constraints	Low	Communication most useful and desired to encourage <i>extra savings</i> .	Communication can increase <i>pension awareness</i> and can encourage taking precautionary measures.
	High	Communication useful and desired, but focused on <i>suggesting later retirement or alternative strategies</i> .	Communication can increase <i>pension awareness</i> , but does not affect behavior.

help them realize their desired solution path. Individuals who do not save enough but who nonetheless have low income constraints could be helped by communications that stimulate them to save more, for example by increasing their pension plan contributions. Alternatively, individuals with low savings and with financial constraints might be helped by suggesting that they plan for later retirement, or by preparing them for a better-paying job or a longer career, for example through training and schooling programs. Finally, individuals who are not constrained but who also do not perceive a lack of pension savings could be stimulated to check whether they indeed have accurate perceptions. Urging them to take financial action is likely to be ineffective. Whether such targeted, personalized communications, aimed at improving savings adequacy, are indeed effective and feasible could be validated in future research. A practical constraint may be that pension funds do not always have a sufficient overview of a participant's full financial situation and may need to draw on alternative information sources to be able to determine the relevant segment structure.

The different groups in this conceptual classification also may need to be targeted through different communication channels

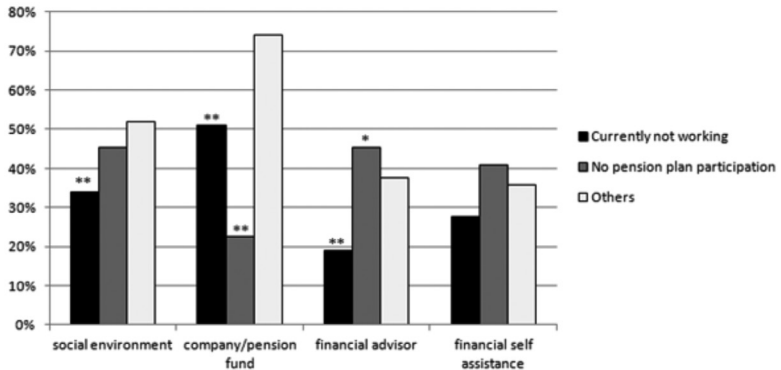


due to their different personal situations. Therefore, using earlier data from a different, smaller sample, we also explored what information sources people typically intend to use when searching for information about retirement income and life after retirement. These data were collected from a representative Dutch household sample from CentERdata in 2009, with 468 individuals qualifying for participation. Respondents were between 25 and 65 years old, were the main wage earner, and either worked as an employee, were unemployed, or (partly) disabled. We only included respondents who had answered our survey completely. The average age of the respondents was 48 years, 76% were male, 65% had a partner, and the median net household income was between EUR 1,801 and 2,600 per month.

In the survey, respondents were shown a pre-specified list of information sources and were asked to indicate which sources they would use. Factor analysis, including information sources for both life after retirement and retirement income, revealed four general groups of sources that respondents use: their social environment ("family, friends, or acquaintances"; "people who already have retired"; "colleagues"), their company/pension fund ("the company you work(ed) for"; "your pension fund"), a professional financial advisor, and financial self-assistance ("financial magazines, guides and/ or books"; "financial information on the internet"; "financial calculators on the computer or internet"). To obtain a score of information source consideration, we coded the use of a group as 1 (vs. 0) if the respondent considered using at least one source that belongs to that particular group.

As shown in Figure 3, individuals who currently do not work (unemployed/disabled) consider all possible sources of information to a lesser extent in their planning for retirement than the

Figure 3. Use of information sources for different segments<sup>§</sup>



§ Significant from control group ("others") at \*\*  $p < .05$  or \*  $p < .10$ . Significance derived from logistic regression with, as dependent variable, 'source consideration' (yes vs. no) and, as independent variables, two dummies for 'currently not working' and 'no pension plan participation'.

other groups. Workers with no employer pension plan from their current or last job are, as expected, less likely to use their company or a pension fund as an information source, but they are more likely to use a financial advisor. This reflects the fact that they carry a greater responsibility for arranging their own pension affairs.

#### 4.3 Limitations and future research

Our study has certain limitations, and the findings suggest interesting avenues for future research.

First, although we find that individuals plan for a higher retirement age when perceived income constraints are strong, these adjustments only function well when they also anticipate that they have the opportunity to work longer and that they are physically able to do so. Otherwise it is risky for people to anticipate a later retirement age. Policymakers could help create

appropriate conditions for working longer and thereby support individuals to execute this retirement planning strategy.

Second, in this study we argue that individuals can either choose to retire later or to save more in response to inadequate retirement savings. While these two strategies are likely to be the most prominent ones for individuals to follow, an alternative can also be to accept leading a more sober life after retirement. In this study we have not examined how people think about this third alternative and whether it is part of their planning process.

Third, future research might take into account the possible interactions with personal characteristics of the individual, such as their current age and whether they have a partner. Besides a person's current financial situation, which we used in our study, age and the presence of a partner can be other important factors that determine one's ability to adjust savings (in terms of the opportunity to still increase savings later). For example, previous research has shown that age can have a strong influence on how people think about their retirement (Van Schie et al., 2015). As such, age is also likely to influence whether someone perceives higher saving or postponement of retirement as the more valid strategy to overcome inadequate savings.

Fourth, at a more general level it would be worthwhile to analyze how changes in government and social policy with respect to retirement age and labor market arrangements affect the ability of individual persons to absorb shocks in their retirement savings. Our research suggests that especially financially vulnerable groups, such as the unemployed, may have fewer and fewer options to compensate for a loss in retirement income as the retirement age goes up. Due to the income constraints that they face, they have very limited opportunity to increase their retirement savings. Whereas in the past they could choose to work

beyond the traditional retirement age of 65, in the future they may not be able to do so as their capacity to work beyond a new retirement age, of for example 72 years, may be very limited. In terms of labor market shifts, the growing group of flex workers, who are not legally required to participate in a collective pension arrangement, may be especially vulnerable for not saving enough for retirement, as they may not be inclined to increase their rates to include pension plan payments.

## 5. Conclusion

In this study we found that perceptions of savings adequacy and current income constraints play an important role in personal retirement planning. In particular, the current income constraints of individuals affect whether they will plan to save more for retirement or to retire later. We studied in more detail two vulnerable groups – those who currently do not work and those with no employer savings plan – that differ in terms of their current financial situation. We investigated their financial perceptions about perceived income constraints and their current level of savings adequacy, plus their intentions to save extra and of when to retire. We found that both groups are aware of being at risk of saving not enough for retirement. The difference in their perceived income constraints determines how they respond to this savings problem. Those who are financially able to save more ('no pension plan participation' group), are more likely to increase their savings intentions rather than to retire later, while those who are not financially able to save more ('currently not working' group) are more likely to postpone their planned retirement age. We also analyzed the implications that this may have for pension communication and what channels may be most suitable for each group.

Jointly, these results show that individuals are aware of their limited preparedness for retirement, but that, based on their current financial situation, they tend to adjust their retirement plans by either planning to save more or to retire later. This has clear and valuable implications for pension communication policy. We hope that our research will stimulate other researchers to further study the interplay of situational differences and environmental factors on the planning of individuals for retirement, to

ensure further refinement of tailor-made pension communication schemes, thus providing individuals with information that helps them execute the strategy that they wish to pursue.

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## Appendix 1: Sample characteristics (n = 1472)

	Mean	Std. Deviation	Minimum	Maximum
Planned pension age	64.23	3.133	42	90
Planned pension age – expected State pension age	-1.7072	2.92842	-13.00	14.00
Savings intention	2.5095	1.76757	1.00	7.00
Income constraints	2.4959	.95014	1.00	5.00
Low savings adequacy	3.0740	1.1059	1.00	5.00
No pension plan participation	.0489	.21576	.00	1.00
Currently not working: current status	.0319	.17587	.00	1.00
<b>Other variables</b>				
Gender (1 = male; 2 = female)	1.3757	.48446	1.00	2.00
Age	48.4715	9.58786	25.00	65.00
Partner (1 = no, 2 = yes)	1.6223	.48498	1.00	2.00

Education (Dutch categories)			
	frequency	percentage	cumulative
elementary education	16	1.1	1.1
pre-vocational (vmbo)	109	7.4	8.5
high school (havo/vwo)	117	7.9	16.4
secondary vocational (mbo)	301	20.4	36.9
university of applied science (hbo)	598	40.6	77.5
university (wo)	331	22.5	100.0
Net household income (euros per month)			
	frequency	percentage	cumulative
<1,000	22	1.5	1.5
1,000–2,000	360	24.5	26.0
2,000–3,000	413	28.1	54.1
3,000–5,000	380	25.8	79.9
>5,000	94	6.4	86.3
Missing	203	13.8	100.0



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## Save more or retire later?

Many individuals do not contribute sufficiently towards their pension savings to support an income at their planned retirement age that provides their desired standard of living. They can follow two main strategies to overcome this gap: save more or retire later. In this study Ron van Schie (CBS/EUR), Benedict Dellaert and Bas Donkers (both EUR) investigate how the intentions of individuals to follow each strategy may be interrelated. In particular, they argue that lower perceived savings adequacy increases savings intentions of individuals, but that if current perceived income constraints are also strong, savings intentions decrease and individuals intend to retire later.

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June 2016