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Personal traits and individual choices: Taking action in economic and non-economic decisions☆

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ABSTRACT

In a large number of decisions, the option that does not require a specific action such as filling in a form is chosen frequently. It is a stylized fact that opt-in or opt-out designs for otherwise identical choices lead to vastly different outcomes. Choice options are chosen more frequently simply because they are the no-action alternative or default option. However, direct empirical evidence on the reasons for the popularity of defaults is scarce. We devised a special survey module for the Dutch DNB Household Survey to study potential explanations for default choices. We find that the popularity of the default option is related to different personal traits in economic and non-economic decisions. Financially literate individuals are more likely to take action and opt out the default option in economic decision-making. In non-economic decisions, procrastination increases the popularity of the default while individuals who care much about the opinion of others are more inclined to deviate from the default.

1. Introduction

The role of default options in individual decision making is well documented in the empirical and experimental literature. We use the term 'default' in this paper to refer to the no-action choice; in other words the option that follows unless individuals take action and opt out. The popularity of the default option in decision-making is a persistent finding in economic settings, like pension savings and insurance, as well as in non-economic settings, like organ donation and Internet privacy policies.

The literature is less clear-cut on the reasons behind the attractiveness of default options. The importance of the default option contradicts the predictions of neoclassical economics. Standard choice theory dictates that the design of choice problems, in particular the selection of one of the alternatives as the default, is irrelevant. When transaction or switching costs are small and preferences are well-defined, the consumer is expected to pick the option that maximizes her utility, irrespective of the choice design.

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Why is it then that individuals are attracted to the default? Is there one obvious explanation or do different motivations play a role in different choice situations? Many potential explanations have been suggested including inertia (Kahneman and Tversky, 1982; Landman, 1987), status quo bias (Samuelson and Zeckhauser, 1988), procrastination (O'Donoghue and Rabin, 2001), the interpretation of defaults as endorsements (Madrian and Shea, 2001; McKenzie et al., 2006; Beshears et al., 2009), as well as choice overload and the complexity of choice problems (Agnew and Szykman, 2005). But despite the great deal of attention devoted to the important role of the default or no-action alternative in decision-making, we are not aware of a comparative study on the role of the default in different settings. Nevertheless, these are important questions. As an example, for public policy design, it is relevant whether a limited availability of organ donors is the result of conscious decisions, and – if not – whether it is the consequence of a lack of knowledge rather than of procrastination.

To answer these questions, we have designed a tailor-made module for the DNB Household Survey in the Netherlands to elicit information on personal traits and learn about the relation with choices made in situations with a default option. We do not intend to come up with an optimal choice design, nor do we claim to know what other individuals should choose. The paper is descriptive and takes a positive approach, i.e. we observe choices and relate these choices to personal characteristics. In particular, we study decisions made in organ donation, voting participation, having a will, and retirement saving.

This paper makes a number of contributions. First, we provide empirical evidence on the relative importance of different personal traits for default choices. Second, we investigate default behavior in a number of heterogeneous decisions, including financial and non-financial choices. Third, our analysis is based on survey data. Existing studies use either administrative data or field and laboratory experiments with limited background information on the participants. The use of survey data provides a broad picture of default behavior, as the interviewed people belong to the entire population distribution rather than to a particular sub-sample (typically students or employees at selected firms).[1]

We summarize our main conclusions as follows. The default option is chosen frequently in a number of choice situations in the Netherlands. Part of the observed heterogeneity in choice behavior is related to objective personal characteristics and circumstances such as age, education or income. But other characteristics such as the tendency to procrastinate and the level of financial literacy contribute to the explanation as well. Moreover, we find a distinction between economic and non-economic decisions. Choices that require action are more likely to be undertaken by financially literate individuals in economic decisions, and less likely by individuals with a high tendency to procrastinate in non-economic situations. In addition, individuals who care about the opinion of other people are more likely to register as an organ donor and to vote, both acts which are typically considered acts of good citizenship.

While our analysis is correlational and based on personal traits that are difficult to measure, the empirical findings reveal interesting patterns that give rise to a number of policy implications. One implication of our findings is that in spite of standard theoretical predictions, the default option is relevant for individual decision making. Thus, policy makers need to realize that the design of choice situations is not neutral to the outcome of the decision process. As the role of the default option is not related to a unique determinant, the optimal design of defaults needs to take this into account. In non-economic decisions, where individuals are more likely to adhere to the default due to procrastinating behavior, one may be better off with a design defaulting individuals into the option that is most likely to be appropriate for them or with forcing them to make an active decision. In economic decisions where individuals do not make active choices because of the complex nature of choices, education and information may be more welfare improving especially when individual preferences are heterogeneous. At the same time, increasing the simplicity of choice situations will facilitate active decision making in these cases.

The paper is organized as follows. In Section 2, we provide evidence of choice situations in which the outcome depends on whether the choice situation is formulated as an opt-in or an opt-out design and discuss potential explanation for the popularity of default choices. In Section 3, we describe the data used in our empirical analysis, including the identification of personal traits which are not directly observed such as the tendency to procrastinate tasks. In Section 4, we report descriptive statistics for choice behavior in situations with a no-action default in the Netherlands. In Section 5, we relate the default choices to individual traits in a regression analysis. We provide a discussion of the empirical results in Section 6 and conclude with final remarks in Section 7.

2. Individual decision-making: opt-in versus opt-out designs

Stylized fact in the empirical literature is that it matters a lot whether choices are presented in an opt-in or an opt-out design. The way *organ donor* registers are organized may literally make a difference between life and death for those waiting for an organ donor transplant. Countries where citizens are assumed to be willing to donate their organs unless they register their unwillingness to act as a donor have more potential donors than countries where no one is an organ donor unless an explicit consent has been given. Effective consent rates range from below half of the population in the explicit consent countries to over 80 percent in the presumed consent countries (Johnson and Goldstein, 2003). Actual donation rates as well are considerably higher in countries where citizens are defaulted into organ donation (Abadie and Gay, 2006).

Large differences for opt-in and opt-out designs are found for the number of consumers giving *online permission* for being included in e-mail distribution lists for future contacts (Johnson et al., 2002) and for *car insurance plans* (Johnson et al.,

[1] See Madrian and Shea (2001) or Dhar (1997).

1993). Johnson et al. (1993) compare US states with car insurance plans that by default include the full right to sue for any auto-related injury unless consumers opt out and states with insurance plans where car drivers acquire a restricted right to sue unless they opt in a more extensive contract. They document a huge difference in the fraction of contracts with a full insurance option even though this option is not costless at all (75 versus 20 percent).

Opt-in versus opt-out designs are known to have a large impact for *retirement decisions*. Madrian and Shea (2001) evaluate the consequences of the decision of a large US company to change the opt-in nature of its 401(k) retirement savings plan into an opt-out design. Instant participation rates rose significantly from 37 to 86 percent, with the vast majority contributing the default premium rate and investing all money in the standard fund. Automatic enrolment in retirement savings plans is particularly successful in raising the participation rate of lower-pay employees (Choi et al., 2004), showing that the effect of choice design is related to personal characteristics and circumstances.

Evidence on the role of defaults in retirement choices is documented in many other counties as well. Cronqvist and Thaler (2004) study investment behavior in Sweden, where after a pension reform in 1999 employees had to decide how to invest pension premiums in private social security accounts. One third of the participants chose the default allocation despite the government urging them not to do so. The proportion of default choices rose to no less than 93 percent three years later, after the government stopped its publicity campaign. Default choices are not only relevant for retirement savings accumulation but in the wealth decumulation phase as well. In Switzerland, some company pension funds pay out accrued employer pension savings as a lump sum, while other funds transfer the total capital into a lifetime annuity. All companies offer the possibility to opt out the standard situation, but nonetheless retiring Swiss pension fund participants massively take the pension fund default for granted (Bütler and Teppa, 2007).

2.1. Who opts out and who does not?

Several explanations have been suggested for the attractiveness of default options. We do not aim for a comprehensive overview but rather discuss a number of promising explanations. The tendency of individuals to stick to the current situation may simply reflect a preference for the *status quo* situation (Samuelson and Zeckhauser, 1988). This preference may be explained by a combination of loss aversion, i.e. decision-makers weigh losses more strongly than profits (Kahneman and Tversky, 1979) and the fact that the status quo serves as a reference point for their loss evaluation.

A popular explanation is that default choices are the result of *procrastination* due to present-biased preferences. Individuals may postpone unpleasant tasks and decisions and choose to spend their time in way that provides more immediate gratification. This is consistent with empirical evidence on individuals showing time inconsistent behavior due to the use of a short term discount rate that is larger than the rate used for decisions in the more distant future.[2] As a result, individuals may rationally postpone decisions especially when they are perceived as unpleasant or difficult and time-consuming.

Another important motivation for the importance of default options is that the default is seen as an advice or *endorsement* (Madrian and Shea, 2001; Beshears et al., 2009). In case of 401(k) savings plans the employee may be convinced that his employer wants the best for him, ignoring that pension costs or liability issues may play a role in the plan design as well. Similarly, citizens perceive the way organ donation is organized as a reflection of the policymakers' preferences and the urge to participate (McKenzie et al., 2006). In general, individuals who are more advice seeking or have a stronger inclination to rely on advice may be more likely to go along with the default option as well.

3. Data

We have collected information on individual choices in several situations with a default option from the households participating in the DNB Household Survey (DHS). The DHS is an annual survey among about 2000 households in the Netherlands that started in 1993. All household members aged 16 years and older are allowed to participate. The panel is run at Tilburg University by CentERdata.[3] In case of attrition, CentERdata recruits new participants to maintain the panel size and to keep the panel representative on a number of relevant background characteristics such as age, gender, income, education, and region of residence. The DHS dataset contains detailed information on employment status, pension arrangements, accommodation, wealth, as well as health status and psychological concepts. The dataset thus provides the opportunity to combine both economic and psychological aspects of financial behavior.

We have devised a special module on default behavior that was fielded in the weekend of June 2–6, 2006. Out of 2467 panel members contacted, 1648 completed the questionnaire, a response rate of 66.8 percent. By merging the special module with the annual DHS survey, we are able to exploit the rich set of background information. The age of the respondents in our sample ranges from 16 to 91 years (mean age is 48.5); men and women are equally represented (men account for 52.6

[2] Hyperbolic discounting is an example of time-inconsistent discounting (Laibson, 1997), but it extends to broader classes of time preferences (O'Donoghue and Rabin, 1999, 2001). The idea of time-inconsistent discounting goes back to the work of Strotz (1956), Phelps and Pollak (1968), Pollak (1968), and Akerlof (1991).

[3] Throughout the years these data have been used extensively in economic research (see e.g. Van der Heijden et al., 2012, Donkers and Van Soest, 1999, Van Rooij et al., 2007, Kapteyn and Teppa, 2003, or Kapteyn et al., 2009). More information on CentERdata, the CentERpanel and the DHS is available at the website (http://www.uvt.nl/centerdata/dhs).

Table 1
Statements about personal attitudes and choice behavior in the Netherlands: wording and summary of responses. Percentages of total number of respondents ($N = 1648$).

Please indicate on a scale from 1 to 7 to what extent you agree with each of the following statements (1 means 'completely disagree' and 7 means 'completely agree')?	1	2	3	4	5	6	7	DK	Mean
When making important decisions (e.g. buying a car or investing money)									
Q1 – I usually talk with other people about it	3.1	8.6	8.0	13.8	25.1	27.4	11.7	2.1	4.8 (1.6)
Q2 – I usually take these decisions on my own	19.8	24.9	16.3	9.7	9.7	11.4	5.5	2.4	3.2 (1.9)
Q3 – When I have to buy products requiring specific expertise (e.g. a financial or a technological product), I talk about it with family or friends	3.0	7.2	7.9	14.7	29.5	24.6	10.6	2.4	4.8 (1.5)
Q4 – I often rely on what people say	8.9	23.3	24.2	25.7	12.3	3.3	0.4	1.6	3.2 (1.3)
Q5 – I usually do what other people tell me to do	13.8	26.7	22.2	21.4	10.7	2.7	0.4	1.8	3.0 (1.4)
Q6 – I have troubles to say no to people	6.4	14.8	12.1	13.5	25.9	18.5	7.0	1.6	4.2 (1.7)
Q7 – I do chores right away	4.7	14.4	23.4	21.2	17.8	12.7	4.5	1.1	3.9 (1.5)
Q8 – I tend to make promises that I cannot keep	29.4	38.8	13.6	8.1	5.9	1.7	0.6	1.6	2.3 (1.3)
Q9 – When I promise to do something, I usually do that later than I should	18.8	34.4	16.6	11.0	12.3	3.6	1.6	1.5	2.8 (1.5)
Q10 – Changes are scary	12.7	26.9	20.4	20.7	13.1	3.3	1.0	1.6	3.1 (1.4)
Q11 – Changes are often not an improvement	4.3	13.8	14.5	30.4	16.6	11.8	6.0	2.5	4.0 (1.5)
Q12 – I would describe myself as a careful person	1.6	5.6	11.9	20.9	27.9	23.7	6.6	1.5	4.7 (1.4)
Q13 – When there is possible danger, I take many precautions	0.4	4.1	8.0	17.4	31.9	25.5	10.1	2.4	5.0 (1.3)

Notes: Mean refers to the average of the seven response categories from 1 to 7 (standard deviation in parentheses); DK = 'I do not know'.

percent). As for household composition, 71.1 percent of the respondents are married or living with a partner, the others are single heads of the household (22.9 percent) or children living with their parents (6.0 percent). Two out of three respondents have children. About one third of the respondents have a college education (which includes vocational training in addition to university degrees), about one third have an intermediate education level (secondary pre-university and intermediate vocational), and about a third have a lower education level (primary and preparatory intermediate vocational training). Overall, 19.6 percent of respondents are retired (including early retirees), 49.5 percent are employees, and 3.7 percent are self-employed. The remainder of the sample consists of individuals who are not retired and not working, including those who are disabled or unemployed and those who follow an education program or take care of housekeeping.

A potential concern for the empirical part of our study is that our sample may suffer from selectivity. We have compared the sample of 1648 respondents with the group of 819 non-respondents on a number of personal characteristics such as age, education, gender, income, home ownership, and household composition. Elderly respondents appear somewhat overrepresented in our sample and the participation of younger individuals is relatively low, a response pattern that is common to many surveys. Apart from age (which is included as an explanatory variable in the regression analysis), the composition of both groups is quite similar. Respondents and non-respondents may nevertheless have different unobserved personal traits. When the choice to participate in the survey reveals a stronger inclination to take action among respondents compared to 'average' citizens, then the respondents are also more likely to deviate from the default or no-action alternative. If this type of selection bias is present in our sample, the empirical results in our study are likely to underestimate the importance of the default option.

3.1. Elicitation of individual traits

To investigate heterogeneity in individual decision making, we link default choices to personal traits which are not directly observable. We present the interviewees 13 statements on personal attitudes and choices in real life situations that reveal information on individual traits that may be relevant for default behavior. The respondents are asked to indicate to what extent they agree with each of the statements on a scale from 1 ('completely disagree') to 7 ('completely agree'), and they have the possibility to indicate that they 'do not know' or 'refuse to answer'. The statements are presented in random order to the respondents to prevent any ordering effects in response patterns.

Table 1 reports the wording of the statements and the responses. These are questions on whether and how people collect advice (Q1–Q2), the importance of advice for their decisions (Q3), the role of the opinion of other people (Q4–Q6), whether the interviewees tend to postpone tasks or decisions (Q7–Q9), whether they have a preference for the status quo or no-change situation (Q10–Q11), as well as on carefulness and precaution (Q12–Q13). Response patterns reveal a high degree of heterogeneity among respondents. The number of refusals and do not knows is limited.[4]

[4] We have experimented with additional statements, in particular on regret aversion. However, the number of 'do not know' and 'refusal' answers signaled that either the respondents did not have a strong opinion on these issues or that these questions were not fully clear to them.

Table 2
Statements and the highest factor loadings from a principal component analysis.

Statements	Factors			
	Procrastination	Advice seeking	Inertia	Endorsement
I do chores right away	−0.59			
I tend to make promises that I cannot keep	0.69			
When I promise to do something, I usually do that later than I should	0.78			
When making important decisions, I usually talk with other people about it		0.84		
When making important decisions, I usually take these decisions on my own		−0.57		
When I have to buy products requiring specific expertise, I talk about it with family or friends		0.77		
Changes are scary			0.56	
Changes are often not an improvement			0.66	
I would describe myself as a careful person			0.77	
When there is possible danger, I take many precautions			0.60	
I often rely on what people say				0.75
I usually do what other people tell me to do				0.69
I have troubles to say no to people				0.49

Note: For each of the statements we report the highest factor loading from a principal component analysis using varimax rotation; $N = 1518$.

To summarize the information from the responses, we run a principal component analysis for the 1534 respondents who provided an answer to the full set of questions and exclude respondents who filled in one or more 'do not knows' or 'refusals'. The variation in the responses is captured adequately in four factors.[5] Factor loadings measure to what extent each factor is correlated with the responses to the original statements. For each statement we identify the factor with the highest correlation (Table 2). Reviewing the statements provides us with a meaningful interpretation of the factors. The first factor is clearly related to the three statements on *procrastination*, as the underlying survey questions refer to the immediate or delayed execution of tasks and intentions. We label the second factor as *advice-seeking* as it measures to what extent respondents gather and trust advice from family and friends before taking a decision.[6] The third factor measures *inertia* as it is related to the intensity in which people adhere to the status quo. The underlying survey questions suggest that there may be two different reasons for sticking to the status quo: first, individuals may be adverse to changes and, second, the status quo may result from the wish to carefully consider all alternatives before taking action.[7] The fourth factor measures to what extent people feel *endorsed* by the opinion of others as it scores high on the statements related to how important it is what other people say. At first sight, the advice-seeking and endorsement factor seem closely related as both have to do with the opinion of others.[8] The difference is that the survey questions underlying the endorsement factor seem to be related to the willingness to conform to wishes and believes of people in general, while the advice-seeking questions refer to an active behavior in which respondents go and ask for advice of family and friends. Based on the clustering in Table 2, we perform a principal component analysis on each group of questions and extract principal component factors.

4. Decisions with a default alternative: descriptive evidence

We investigate actual choices in four important decision situations: organ donation, voting participation, having a will, and retirement savings. These decisions cover four heterogeneous choice situations. Giving consent for organ donation for example is a reversible decision that may be influenced by moral or religious convictions. Voting occurs at fixed dates with an obvious deadline and is an irreversible but recurring action. Having a will is a reversible choice, though involving non-negligible costs. In the Netherlands, employees typically participate in compulsory, collective retirement plans run by the company pension fund. Individual employees have no control over the level of contributions and the investment policy which are decided upon by the pension fund in accordance with the guidelines from trade unions and employers. The decision to have individual additional savings for retirement is a continuous, dynamic choice, requiring specific financial expertise.

[5] We retain factors with an eigenvalue that exceeds 1, i.e. those factors which explain a more than proportional part of the variation in responses. The cumulative proportion of variance that is explained by these four factors amounts to 55 percent.
[6] The important role of trust or distrust in decision-making is highlighted by Guiso et al. (2008), and Agnew et al. (2007).
[7] Tversky and Shafir (1992) argue that when choices are difficult, it may be optimal to go along with the default option to gather more information or search for alternatives.
[8] This clearly discriminates these two factors from the other two as the survey questions measuring inertia and procrastination do not refer to others.

Table 3A
Organ donation and voting participation.

	Are you an organ donor, i.e. are you registered in the donor register as being willing to act as an organ donor?		Did you vote last time for the *national election*?	
	Frequency	Percentage	Frequency	Percentage
Yes	824	50.0	1452	88.1
No	745	45.2	164	10.0
Refusal	21	1.3	5	0.3
Do not know	58	3.5	27	1.6
Total	1648	100.0	1648	100.0

Table 3B
Having a will and having voluntary retirement savings.

	Do you have a will?		Do you have other arrangements for your pension apart from the standard customary pension you build up through your employer?	
	Frequency	Percentage	Frequency	Percentage
Yes	637	38.7	543	33.0
No	981	59.5	954	57.9
Refusal	9	0.6	18	1.1
Do not know	21	1.3	133	8.1
Total	1648	100.0	1648	100.0

4.1. Non-economic decisions: organ donation and voting participation

Two systems of *organ donation* are used worldwide. In an opt-in system, individuals are asked to register their willingness to become a donor. Countries that run the alternative system assume that their citizens consent to organ donation unless they indicate otherwise and explicitly opt out. In the Netherlands the former regime applies: individuals willing to donate their organs have to record themselves in the donor register. When individuals do not act and fill in a registration form, they are not registered as an organ donor. We consider this the default option but this option is not necessarily what respondents consider as the standard or most desired choice which may be influenced by moral or religious convictions. In our sample, half of the respondents have registered themselves as being willing to act as organ donor (Table 3A).

A distinguishing feature of a democratic society is universal *voting*. Each citizen is entitled to participate in national elections, conditional on satisfying some legal requirements, for example related to age and nationality or residence. In some countries, citizens are obliged to vote. In the Netherlands, voting participation is a right and not a legal requirement. While the default (no-action) option is not to vote, a large number of the respondents in our sample have voted in the recent national election (Table 3A).[9] The group of non-voters is relatively small. Thus the no-action default is not chosen very often, which is different from decisions that are usually investigated in studies on default behavior. Note however that the costs of voting are low. There are no direct financial costs. Once individuals have made up their mind about the political party of their preference, they basically make a short trip to a municipal voting place (usually a school or library at walking distance), show their identification and press the button corresponding to their vote. Benefits of voting on the other hand are perhaps not so much related to the direct impact on the outcome of the national election, but more to the joy of exercising one's voting right or the fulfillment of a moral responsibility. Moreover, one might perceive peer pressure, i.e. a social norm in a community that one ought to vote.

4.2. Economic decisions: having a will and additional retirement savings

Table 3B reports choices related to having a will. A *will* or testament typically declares the destination of a person's belongings after his or her death or regulates the custody of children. A notary provides advice, puts up the will and takes care of its execution. Having a will is neither a quick nor a costless decision and not having a will is the default. About 60 percent of the respondents does not have a will.

The *pension* system in the Netherlands consists of three pillars: the first pillar is a pay-as-you-go state pension; the second layer consists of fully funded, privately provided pension provisions; the third component is fully voluntary. Employees have hardly any discretion about their first and second pillar arrangements that is if we disregard an indirect influence via voting (potentially affecting the state pension) and via the negotiations of trade unions (potentially affecting the company

[9] The official statistics report a somewhat lower voting participation rate (80 percent) compared to 88 percent recorded in our sample. Using weights to correct for differences in sample composition and population statistics regarding age, income, gender and education, the voting participation rate in our sample increases to 84 percent. Voogt and Saris (2003) compare voting participation by survey respondents with administrative data and find that higher voting participation recorded among respondents are attributed to a higher social involvement among survey participants.

retirement plan). The state pension is financed through the tax system and was at the time of the survey equal to a monthly benefit of about €900 for single persons. The employer contributes on behalf of the employee part of the salary payments, together with the company matching, to a pension fund that administers the company plan. This way, over 90 percent of the Dutch employees saves compulsorily for retirement (Van Els et al., 2007).

The basic retirement choices available in the Dutch pension system are whether to set apart additional savings via third pillar retirement savings products, or whether to retire earlier than the regular retirement date. A third of the respondents has taken other arrangements for their pension apart from the standard customary employer pension as to supplement their income after retirement or to make early retirement possible (Table 3B). The others adhere to the default, i.e. they did not purchase voluntary, typically tax-deductible, pension products.

5. Sticking to the default or opting out: a regression approach

Descriptive statistics document that the no-action default is a popular choice in many areas of individual decision-making in our sample of Dutch respondents. The default option attracts the majority of decision-makers in the two economic domains where the decision requires some additional financial skills (having a will, and saving for retirement). The role of the default option is less strong in non-economic decisions, particularly in voting behavior and to a lesser extent for organ donation. Note that for both decisions, opting out may be consistent with a social norm on what people are 'expected' to do. Below, we investigate the relation between these and other personal traits and individual choices.

We investigate whether the preference for default options is related to different behavioral aspects in economic decisions than in non-economic decisions. In particular we include the personal traits elicited previously and a measure for the respondents' level of financial literacy, a determinant that *ex-ante* we expect to have a significant role in economic decisions only. Instead of inserting many different questions to measure financial knowledge and ability, we have included one question on self-assessed literacy that has proved to be a good proxy for more advanced measures of financial sophistication (Van Rooij et al., 2011). Note that self-assessed financial literacy might be more relevant for the respondents' inclination to take action and deviate from a default than objectively measured knowledge.[10] We asked respondents to assess their level of financial literacy on a 7-point scale, from which we derived a dummy variable taking value 1 if the respondent considers himself literate or very literate (score 4–7), and 0 otherwise (score 1–3). Other controls in the regression analysis include the traditional socio-demographic variables and relevant background information: gender, age, level of education, job status, household composition, home ownership, gross personal income, and household financial assets.

We run probit regressions to relate respondents' choices to a set of socio demographic and individual characteristics including the measures for procrastination, advice seeking behavior, inertia and endorsement. The dependent variable takes the value 1 if respondents choose the default option and the value 0 otherwise. Table 4 reports the results in terms of marginal effects of a probit regression. A positive sign implies that the higher the degree of the corresponding explanatory variable, the higher the probability of adhering to the default option. A negative sign points to a higher likelihood to opt out.

Obviously, default options are not necessarily suboptimal. In fact, there are many situations conceivable in which the default coincides with the optimal decision. For example, leaving a will may not be necessary or worth the cost for individuals with little wealth and no children. As a result we expect that the traditional variables such as income, age, and household composition will explain a substantial part of the heterogeneity among individuals in choosing or deviating from the default option. We are particularly interested in whether the other 'nontraditional' variables help explaining observed differences in choice behavior.

Table 4 shows that the behavioral characteristics provide an important contribution to explaining the observed variation in organ donation choices. In particular, the tendency to procrastinate is strongly related to the decision to register as an organ donor (opt out) or not (adhere to the default). Respondents with a one standard deviation higher score on the procrastination scale are 7.3 percentage points more likely not to enter the donor register.[11] Respondents who score high on the endorsement scale have a higher probability to opt out and take action to register as organ donor. Both effects are statistically significant at the 1 percent significance level. Inertia is the third behavioral characteristic that is important for organ donation decisions, but at a lower significance level (5 percent). More inert respondents are more likely to adhere to the default of not registering as an organ donor. The other controls make clear that women, self-employed and young individuals are more likely to opt out and register as an organ donor.

The regression results for voting participation show that procrastination and endorsement contribute significantly to the explanation of the decision to vote or not. Procrastinators are less likely to have voted in the recent national election and those who are sensitive to the opinion of other people have a higher probability to vote. This is consistent with the view shared by many citizens that the right to bring out a vote on the composition of a new national Parliament is not only a democratic privilege but a 'moral' civic duty as well. Women, elderly and those with high education are more likely to bring out their vote. As expected financial literacy does not play a role, neither in voting participation nor in organ donation.

[10] Van Rooij et al. (2012) for example find that individuals who are overconfident with respect to their objectively measured financial knowledge more often take the step to explore retirement saving needs.

[11] The four factors that have been elicited to measure behavioral characteristics are normalized, i.e. have mean 0 and standard deviation 1.

Table 4
Determinants of default choices: behavioral and background characteristics.

	Organ donation	Voting	Will	Retirement saving
Procrastination	0.073**	0.016*	0.030	−0.018
	(5.1)	(2.2)	(1.9)	(−1.0)
Advice seeking	−0.004	0.007	0.003	0.018
	(−0.3)	(1.0)	(0.2)	(0.9)
Inertia	0.032*	−0.004	−0.018	0.031
	(2.0)	(−0.6)	(−1.1)	(1.6)
Endorsement	−0.049**	−0.025**	0.028	−0.031
	(−3.1)	(−3.4)	(1.7)	(−1.7)
Financial literacy	0.024	−0.008	−0.074**	−0.089*
	(0.8)	(−0.6)	(−2.6)	(−2.5)
Male	0.109**	0.040**	0.083*	−0.045
	(3.3)	(2.8)	(2.4)	(−1.1)
Age (in years)	0.003*	−0.003**	−0.008**	−0.004*
	(2.4)	(−4.0)	(−4.6)	(−2.1)
Mid education	−0.029	−0.034*	0.005	−0.042
	(−0.8)	(−2.4)	(0.1)	(−0.9)
High education	−0.003	−0.061**	0.006	−0.033
	(−0.1)	(−3.4)	(0.2)	(−0.7)
Employed	−0.075	−0.025	0.033	−0.086
	(−1.7)	(−1.2)	(0.7)	(−1.6)
Self-employed	−0.189*	0.038	−0.128	−0.010
	(−2.3)	(1.0)	(−1.5)	(−0.1)
Retired	−0.091	−0.019	−0.037	
	(−1.8)	(−0.8)	(−0.7)	
Partner	−0.005	−0.013	−0.089*	−0.047
	(−0.1)	(−0.7)	(−2.1)	(−1.0)
Number of children	−0.055	0.008	−0.105*	−0.018
	(−1.4)	(0.4)	(−2.3)	(−0.4)
Home ownership	−0.019	−0.028	−0.320**	−0.018
	(−0.5)	(−1.5)	(−8.2)	(−0.4)
Gross income Q2	−0.052	−0.007	0.012	−0.104
	(−1.1)	(−0.4)	(0.2)	(−1.7)
Gross income Q3	−0.136*	−0.016	−0.014	−0.201**
	(−2.5)	(−0.7)	(−0.2)	(−2.9)
Gross income Q4	−0.113	−0.044	−0.056	−0.208**
	(−1.9)	(−1.9)	(−0.9)	(−2.8)
Total financial assets Q2	−0.037	−0.008	−0.074	0.011
	(−0.8)	(−0.4)	(−1.5)	(0.2)
Total financial assets Q3	−0.039	0.003	−0.023	−0.062
	(−0.8)	(0.2)	(−0.4)	(−1.2)
Total financial assets Q4	−0.065	−0.005	−0.099	−0.068
	(−1.4)	(−0.2)	(−1.9)	(−1.2)
Observations	1394	1426	1430	954
Log-likelihood	−920.7	−378.9	−767.7	−607.8
p-Value test education = 0	0.66	0.00	0.99	0.65
p-Value test income = 0	0.07	0.23	0.52	0.02
p-Value test fin. assets = 0	0.59	0.96	0.16	0.31

Note: Marginal effects from probit regressions. Robust *t*-statistics in parentheses; income and financial assets refer to quartile dummies (bottom quartile is the reference group).
* $p < 0.05$.
** $p < 0.01$.

The results for having a will and having voluntary retirement savings are vastly different. Financial literacy is important in explaining the observed variation in choice behavior. Financially literate individuals are 7–9 percentage points more likely to opt out the default situation of no will and no retirement savings. In contrast, we do not find a relation with procrastination or other behavioral characteristics. Elderly and females are more likely to have a will, as well as home-owners and respondents with a partner or children. In these cases, a will that lays down agreements on real estate, inheritance and the custody of children may prevent much uncertainty or disputes among survivors. Unsurprisingly, elderly and high income respondents are more likely to have additional third pillar retirement savings on top of the compulsory participation in company pension funds.

6. Discussion

The literature provides many examples in which the use of an opt-in versus an opt-out design gives rise to a shift in the fraction of consumers choosing one option or another. In particular, the popularity of a choice option increases once used

as the default. Our evidence suggests that in different choice settings different personal characteristics play a role in the decision to opt out or not.

Carroll et al. (2009) introduce a model that can be used as a framework to think about heterogeneity in default choices across different decisions. The key assumption is that consumers trade off costs and benefits of opting out now against opting out later. Present-biased preferences introduce a tendency to postpone spending time and effort on what choice is optimal and undertaking action to opt out the default situation if needed. When the net benefits of tackling a choice problem soon are large, it is worthwhile to overcome the inclination to postpone the decision making process. The implication is that when individuals expect large net benefits from opting out or when the effort to come to a decision and to opt out is low, individuals are likely to opt out sooner rather than later. This model provides us with a framework to think about possible interpretations of our regression results on economic and non-economic decisions, even though we do not have individual measures for costs and expected benefits of decision-making.

The trade-off between spending time and effort on making a decision now or spending time on more appealing activities introduces a role for complexity in relation to cognitive ability in determining the attractiveness of default options.[12] A high level of financial sophistication reduces the costs of collecting, gathering and interpreting information that is necessary for important financial choices and illiterate individuals may show a higher aversion to these decisions.[13] This may explain the relation between financial literacy and the likelihood to deviate from the default in voluntary retirement savings decisions. Similarly, when financially sophisticated individuals face lower processing and information costs they are more likely to go through the process of setting up a will.

An alternative explanation for the relation between financial literacy and the participation in voluntary retirement savings plans on top of the company plans is that financially sophisticated individuals have better insight in the potentially high benefits of additional retirement savings. This is consistent with the finding by Alessie et al. (2011) that Dutch employees with lower levels of literacy have too high expectations regarding the replacement rates of compulsory pension plans. We do not find that procrastinating behavior in itself is important in explaining default choices in economic decisions other than procrastination related to the complexity of the decision problem.[14]

Individuals with a high tendency to procrastinate do have a higher likelihood not to register as an organ donor. Personal benefits are less salient for organ donation than in economic decisions; registration is above all an act of altruism. Thus citizens who are prepared to be an organ donor may not have registered because they keep putting off the actual act of registering, while present-biased preferences keep them from moving from an intention for the future to concrete action now. Similarly, personal benefits in voting behavior are quite abstract compared to the concrete effort of going to the local school or library where citizens have to administer their vote. However, as opposed to organ donor registration, voting occurs at a specified day typically once in every four years and there is clear deadline when the polling station closes. The deadline may be an effective way to limit the effect of procrastination.

In non-economic decisions we observe a significant relation between the decision to opt out and the endorsement factor, measuring the importance attached to the opinion of other people. In other words, these individuals care about norms in a community and feel endorsed by friends, neighbors and colleagues. Note that this interpretation is different from the one where individuals feel endorsed by a knowledgeable authority,[15] but it is consistent with evidence on the importance of social interactions documented in the literature on participation in retirement plans (Duflo and Saez, 2002, 2003) and in the stock market (Hong et al., 2004; Brown et al., 2008). It is also consistent with the implications of the theory of conformity by Bernheim (1994) whose model shows how status and social interactions explain individuals behaving in line with perceived social norms. Our results suggest that those who are more sensitive to peer opinion and social norms are more likely to deviate from the default when the alternative is commonly thought off as a good deed as is the case in organ donation and voting.

7. Concluding remarks

This paper explores individual choices in very different situations with a default option. We relate the decision to opt out the no-action or default alternative to an extensive set of individual background characteristics. A number of interesting patterns emerges when we compare choice behavior in economic and non-economic decisions. In economic decisions, the popularity of default choices also documented in other studies is mainly related to financial illiteracy among decision-makers. In particular, we find that more financially sophisticated individuals are more likely to have taken action to participate in

[12] One dimension of complexity is the number of choice options. Iyengar and Lepper (2000) motivate that increasing the number of choice options does not necessarily improve consumer welfare and in fact may prove demotivating and create dissatisfaction. Indeed, empirical studies on asset allocation decisions provide examples of choice overload and participants looking for simplicity (Iyengar and Kamenica, 2010; Huberman and Jiang, 2006).

[13] See also the experimental evidence by Agnew and Szykman (2005) which suggests that financially illiterate individuals are more likely to choose the default in complicated exercises.

[14] We have experimented with the inclusion of interaction effects as one could argue that the impact of financial illiteracy is stronger for individuals who are more likely to procrastinate anyway. We did not find empirical evidence for the importance of such interaction effects though.

[15] Beshears et al. (2009) for example mention that the success of automatic enrollment in 401(k) savings plans may be attributed to employees interpreting automatic enrollment as an implicit recommendation by the employer. McKenzie et al. (2006) suggest that the default situation in organ donation may be interpreted as an advice from the government.

retirement savings plans on top of the compulsory participation in company pension plans and are more likely to have taken action to set up a will. We do not find evidence of a relation with the individual tendency to procrastinate due to present-biased preferences. A possible explanation is that the personal, financial stakes are compelling enough not to postpone these financial decisions other than because of the complexity of choice problems. The complex nature of financial decisions increases the effort needed to take decisions and may create a psychological threshold for less financially sophisticated individuals.

The tendency to procrastinate is positively related to sticking to the default option in non-economic decisions. We find a positive and significant relation between procrastination and not taking action to register as an organ donor or to vote, both choice situations in which the direct personal benefits are less salient. However, individuals who are sensitive to social norms and peer opinion are more likely to take action and register as an organ donor or to bring out their vote in national elections. An important difference between organ donor registration and voting participation is that the latter has a clear deadline. The difference in the size and significance of the observed relation between procrastination and choice behavior provides some evidence that enforcing active decisions through the use of a clear and credible deadline helps reducing the effect of procrastinating behavior (as suggested by Carroll et al., 2009).

Our analysis is correlational and we cannot infer causal statements, but the patterns that emerge are interesting in themselves. Moreover, our findings are broadly in line with models that link the popularity of default options to an individual tradeoff between the tendency to procrastinate and the perceived benefits of the decision at hand. We have learned from previous studies that policy makers need to take into account that the design of choice situations is not neutral to the outcome of the decision process. A general implication from our findings is that there is no universal advice for the use of default options in public policy as the decision to opt out the default are related to different personal traits for different decisions. In non-economic decisions, where individuals are more likely to adhere to the default due to procrastinating behavior, one may be better off with a design defaulting individuals into the option that is most likely to be appropriate for them or with forcing an active decision. In economic decisions where individuals may not choose because of the complex nature of choices, education and information may be the way to go forward especially when individual preferences are heterogeneous (see e.g. Beshears et al., 2009). At the same time, increasing the simplicity of financial choices may diminish the role of the default options and facilitate active financial decision making.

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