



# WSF

Working Paper Series

**4Is**

#1/2018

May 2018

## **Increasing the Take-Up of the Housing Allowance Among Swedish Pensioners: A Field Experiment**

Per Engström, Eskil Forsell, Johannes Hagen and  
Arnaldur Stefansson

### Funding

ERA-Net Plus Funding

Grant Agreement Number 618106



WSF Working Paper Series  
NORFACE Welfare State Futures  
Scientific Coordination Office  
Ziegelstr. 13c, 10117 Berlin  
+49 (0)30 2093 1456  
info.wsf.sowi (a) hu-berlin.de  
[welfarestatefutures.org/working-papers](http://welfarestatefutures.org/working-papers)

# Increasing the Take-Up of the Housing Allowance Among Swedish Pensioners: A field experiment\*

Per Engström<sup>†</sup>      Eskil Forsell<sup>‡</sup>      Johannes Hagen<sup>§</sup>

Arnaldur Stefánsson<sup>¶</sup>

May, 2018

## Abstract

Using a randomized field experiment in the Swedish pension system, we investigate whether receiving an information letter affects the take-up rate of the housing allowance for pensioners. We also investigate whether the framing of the information letter affects take-up. The results show that simple information letters had a dramatic effect on the application rate and subsequent take-up rate: the baseline application rate in the targeted control population was only 1.4 percent while the corresponding rates in the different treatment groups were between 9.9 and 12.1 percent. The letter that addressed common misconceptions about the benefit caused significantly higher submission and acceptance rates. The letters had a substantial economic effect on the applicants. We estimate that the applicants, induced by the treatment, increased their monthly income by around 10 percent.

---

\*Funding from the Swedish Social Insurance Agency (nr 028986-2013), Handelsbanken (nr P2015-0147), Forte (2017-00092) and the NORFACE Welfare State Futures Programme (nr 462-14-010) is gratefully acknowledged. Special thanks to Hanna Karlsson Ruiz and Hanna Linnér for providing the data, and Lena Lantz and Emma Akther for managing the experiment.

<sup>†</sup>Department of Economics and UCFS, Uppsala University, Sweden. E-mail: per.engstrom@nek.uu.se

<sup>‡</sup>Department of Economics, Stockholm School of Economics, Sweden. E-mail: eskil.forsell@phdstudent.hhs.se

<sup>§</sup>Jönköping International Business School, Jönköping University, Sweden; Department of Statistics and UCFS, Uppsala University, Sweden. E-mail: johannes.hagen@ju.se

<sup>¶</sup>Department of Economics, UCFS and UCLS, Uppsala University, Sweden. E-mail: arnaldur.stefansson@nek.uu.se

# 1 Introduction

A common feature of various means-tested social benefit programs is that the targeted individuals fail to take-up their benefits (Currie, 2006). Incomplete take-up reduces the effectiveness of social programs and limits the ability of the government to reduce poverty. It is therefore of central policy importance to understand how take-up can be affected. The various factors that might explain why individuals do not apply for the benefits they are entitled to have generally been categorized into lack of information, information costs, transaction costs, stigma and complexity/non-transparency (Currie, 2006). However, little is known about the relative importance of these factors in different parts of the population.

Using a randomized field experiment in the Swedish pension system, we investigate whether information letters with different framing affect the take-up rate of housing allowance for pensioners. Specifically, from a sample of about 90,000 single pensioners (10 percent of all single individuals in the age group 65+) with sufficiently low income to potentially qualify for the housing allowance, about 10,000 individuals were randomly selected to receive any of four different information letters.<sup>1</sup> One of the letters contained basic information about the housing allowance, which was re-produced in the other three letters with a slight addition that relates to the hypothesis we wish to test. One of the framed letters addressed the role of eligibility myths and stigma while the remaining two letters aimed at clarifying the eligibility criteria. An application form was enclosed in all mailings. Therefore, the letters simultaneously lowered both information costs and transaction costs related to applying for the benefit. Individuals who received no information mailing make up the control group.

The housing allowance is a top-up benefit for pensioners with low income and wealth that pays maximum SEK 5,000 (SEK 1  $\approx$  USD 0.12) per month with an average payment of SEK 2,400. Previous studies indicate substantial under-utilization of this benefit and the foregone benefits are large. According to the Swedish National Audit Office, half of the non-claiming individuals are estimated to forego SEK 900 per month, an amount that individuals with a monthly pension income of SEK 10,000 typically could qualify for (Riksrevisionen, 2013). While only 15 percent of the current pensioner population

---

<sup>1</sup>It is not possible to define exactly who is eligible for the housing allowance because of data limitations with respect to wealth and housing costs.

receive housing supplement, as many as 30 – 35 percent are likely to be eligible.

Our study is closely related to two previous studies in the empirical literature on benefit take-up. From a methodological perspective, our study is inspired by Bhargava and Manoli (2015) who conduct an extensive information intervention aiming to increase the take-up of the US EITC. We distinguish our project from Bhargava and Manoli (2015) by studying take-up among a group of non-working individuals in great economic need with low take-up, namely poor elderly. From a policy perspective, it is important to know whether the effectiveness of information letters vary across things like work status and age. The second study is by Matikka and Paukkeri (2016) who analyze the effect on the take-up of the minimum guarantee for pensioners in Finland by sending information on eligibility and an application form to eligible individuals. Our study is similar to the Finnish study in the sense that they also focus on poor elderly. However, in contrast to Matikka and Paukkeri (2016) where the letter recipient status was based on pre-determined pension income status, we randomly assign individuals to different information letters. Furthermore, while Matikka and Paukkeri (2016) study the introduction of a new benefit, we study a benefit that have been in place for long. As a result, we do not have to account for potential effects of media coverage and time on take-up.

The results show that simple information letters had a dramatic effect on the application rate and subsequent take-up. The baseline application rate in the targeted control population was only 1.4 percent, while the corresponding rates in the different treatment groups were between 9.9 and 12.1 percent. The only framed letter that had a significantly different effect from the basic information letter was the letter that addressed common misconceptions about the benefit’s eligibility criteria. This group had the highest application rate of 12.1 percent compared to the basic letter of 9.9 percent. The effects are particularly large for old pensioners (above the age of 80). These findings suggest that there are widespread ignorance and misconceptions about the housing allowance among Swedish pensioners, and that simple information letters may at least be a partial remedy.

Furthermore, the acceptance (eligibility) rates among the applicants are hovering around 50 percent in all treatment groups. The conditional acceptance rate was highest for the letter that illustrated the eligibility criteria using simple rules of thumb. The corresponding eligibility rate in the control group was much higher, around 70 percent. These findings suggest that there is strong positive self-selection among the applicants in

the control group and that the information letters push some individuals to apply even though they are not eligible. However, the overall effects on take-up of the information letters are still positive and dramatic; the unconditional acceptance rate in the control group is only 1.0 percent, while it ranges between 4.6 and 6.0 percent in the treatment groups.

Finally, we find that the economic impact of the treatment was substantial. Using an IV analysis, where application is instrumented by treatment, we estimate an income effect of approximately SEK 750. This means that the applicants, induced by the treatment (i.e. the compliers), increased their income by roughly 10 percent.

Our findings are consistent with some of these studies that find strong positive effects from information letters. Bhargava and Manoli (2015) find large effects on take-up from simple reminders about the EITC and even larger effects from simplified information about the benefit. Matikka and Paukkeri (2016) also find that the targeted information letters about a new guarantee pension system (introduced in 2011) significantly increased take-up and prompted pensioners to apply sooner. Other examples of recent information studies that find positive effects from information letters concerning social benefits include Mastrobuoni (2011) and Liebman and Luttmer (2015). Some studies, on the other hand, find no significant effects from benefit information. Bettinger et al. (2012) find no effect on take-up of financial aid to college students from information alone, albeit information combined with assistance did have a positive effect. Zantomio (2015) also find that a number of measures intended to encourage take-up, including simplified application procedures, application assistance and targeted mailings, had no impact on take-up of the pension credit in the UK.

The remainder of the paper is organized as follows. Section 2 provides a background of the Swedish pension system and the housing allowance for pensioners. Section 3 describes the experimental setup, including the sample selection and the contents of the information letters. Section 4 reports the results from the experiment and Section 5 concludes.

## 2 Housing Allowance and Take-up

Sweden’s pension system has two main pillars, a universal public pension system and an occupational pension system for workers whose employer is tied to some occupational pension plan. The public pension is the most important source of pension income, amounting to 50 – 80 % of an individual’s total pension income. This share typically rises with the income level of the individual because of a progressive feature of the public pension (Hagen, 2017).<sup>2</sup>

The public pension system has in itself three tiers. The first two tiers are income-related and are referred to as the income pension and the premium pension.<sup>3</sup> The third tier is called the minimum guarantee and is paid out to pensioners above 65 years of age who have low or no earnings-related pension. As shown by Figure A1, the reduction is taken in two steps: for low incomes, the minimum guarantee is decreased by the full amount of the earnings-related pension; for higher incomes, the guaranteed pension is decreased by only 48 percent. Thus, a single pensioner with a monthly earnings-related pension of SEK 11,343 or more received no guaranteed pension in 2016.

Another component of basic security in the Swedish pension system is called the housing allowance. The housing allowance is means-tested against income (pension, labor and capital income) and wealth. It is also a function of housing expenditures. If the individual is married or has a co-habiting partner, eligibility depends on the income and wealth situation of the household. The maximum and average benefit level per month is SEK 5000 and SEK 2400, respectively.

Take-up is more common among women than men (20 and 8 percent, respectively). This reflects the fact that women have lower pensions on average. Around 80 percent of those who are entitled to the minimum guarantee are women.

While only 15 percent of the current pensioner population receive housing supplement, as many as 30 – 35 percent are likely to be eligible (Riksrevisionen, 2013). A survey sent out by Statistics Sweden to potentially eligible non-applicants in 2007 offers some explanations for this low take-up (Försäkringskassan, 2007). It showed that around half

---

<sup>2</sup>Specifically, the public pension system contains a ceiling on the income qualifying for pension rights. The ceiling is currently at 7.5 income base amounts ( $\approx$  USD 58 200). For 2018, this means that no pension rights are earned for the monthly wage portion that exceeds SEK 39 000 ( $\approx$  USD 4 800), which is far above what the typical housing allowance recipient would earn.

<sup>3</sup>See Hagen (2017) for a more detailed description.

of the non-applicants did not know about the housing allowance. This suggests that an information letter, regardless of framing, is likely to have a large impact on the submission rate. The survey also showed that one-third of those who knew about the allowance falsely believed that they automatically disqualified because they were house owners (as opposed to living in an apartment). A significant share also believed they disqualified because they had too high income and/or wealth. Thus, the framing of an information letter, particularly with respect to the eligible criteria, may affect submission (and acceptance) rates. The low take-up could also be due to social stigma associated with receiving means-tested benefits, which obviously is difficult to elicit from surveys.

The Pensions Agency is responsible for administrating the housing allowance. This means that they collect the incoming applications and decide whether the allowance should be granted or not. The application form can either be submitted by mail or online and a decision is typically made within 1–2 months (the average waiting time in the experiment is 34 days, see Figure A13).

There are two application forms: one for single households and one for two-person households. Applicants are required to provide information on things that affect eligibility (i.e. household members, type of housing, housing costs, assets, debts, and income). Before making a decision, the Pensions Agency verifies the reported information by requesting information about the applicant(s) from the relevant banks, mortgage lenders and the Tax Agency. The information is always double-checked against the banks if the reported wealth exceeds SEK 100,000. If reported wealth is below this level, the responsible desk officer at the Pensions Agency has the mandate to make a decision without verifying the information. Recipients should notify the Pensions Agency of any changes in the financial, living or family circumstances that might affect the housing allowance.

## **3 Experimental Design**

### **3.1 Sample**

The sample for the field experiment was drawn in May 2016, three months prior to the mailings. The selection criteria for the original sample have been chosen so as to capture elderly who are likely to be eligible for the housing allowance, but for some reason never applied. The individuals in the original sample satisfy the following conditions as of May

2016. First, the pensioners are at least 65 years of age (the housing allowance eligibility age). Second, the pensioners are registered as unmarried (single, divorced or widowed).<sup>4</sup> This restriction is motivated by the fact that more than 90 percent of the estimated eligible non-receiving population are made up of single households (Riksrevisionen, 2013). Third, the pensioners have started to withdraw 100% of their public pension, which is also an eligibility criterion, which amounts to less than SEK 10,833 (average public pension in 2016 was SEK 12,300). This implies that virtually everyone in the sample are eligible for the minimum guarantee.<sup>5</sup> Finally, the pensioners did not apply for the housing allowance in the two preceding years.

The resulting sample consisted of 96,481 individuals, which corresponds to about 10% of the Swedish population of single individuals 65 years old or older. We then dropped 969 individuals who had deceased by August 5 from the sample, i.e. roughly a month before the first letter was sent out. From the remaining sample of 95,512 individuals, henceforth referred to as the *original* sample, 10,013 individuals were randomly selected to receive any of the four different information letters during the fall of 2016 (week 35 to week 39). The others received no letter and hence make up the control group. Figure A2 provides a timeline of the events in the experiment.

We make two restrictions on the original sample to arrive at our analysis sample. First, 3,822 individuals were dropped because information on their public pension was missing. Of these 3,763 had deceased before May 2017, when the Pensions Agency collected information on pension, while 59 individuals had missing information for pension for an unknown reason.<sup>6</sup> Second, 933 subjects were dropped because they submitted an application before the experiment started.<sup>7</sup>

The final sample, called the *main* sample consists of 90,757 individual. Of these 9,534 received a letter, henceforth referred to as the *treatment* sample, and the remaining 81,223 are henceforth referred to as the *control* sample.

---

<sup>4</sup>Because of data limitations, we cannot exclude co-habiting individuals who are not married. It turns out that 8% of the applicants reported that they had a co-habiting partner.

<sup>5</sup>In order to claim the full minimum guarantee, the individual must have lived in Sweden for at least 40 years. The minimum guarantee is reduced by 1/40 for every year the individual has lived elsewhere.

<sup>6</sup>There is not a statistically significant difference in the proportion of subjects having a missing value for pension by treatment status in the original sample.

<sup>7</sup>This is expected because the sample was drawn three months prior to the experiment. Treatment status in the original sample does not have a predictive power for early submission.

## 3.2 Interventions

During the fall of 2016 (week 35 to week 39) the Swedish Pensions Agency sent out letters to the treatment sample.

Four types of letters were sent out, approximately to 2,500 subjects each and 2,000 letters each week, i.e. about 500 of each treatment each week. The information in the most simple letter, which we refer to as the Base Letter, was re-produced in the other three letters with a slight addition that relates to the hypothesis we wish to test. An English version of each letter is provided in the Appendix. The two application forms were enclosed in each mailing.

The Base Letter informed that many pensioners who might be eligible for the housing allowance had not yet applied for it and that the recipient might be one of those. Furthermore there was information on an income level for eligibility, where to apply, how the allowance is paid out, and what it is. The title of the Base Letter was "Have You heard about the Housing Allowance?".

The Myths Letter had, in addition to the information provided in the Base Letter, information aiming to correct for four widespread myths about the housing allowance: the letter explained that the allowance does not depend on the type of housing (tenancy, condominium or own property) nor the value of the residence; that those with low income can have a certain wealth and still be eligible to the allowance; that those who share residence with others may be eligible; and that certain life changes that pertain to housing, income or marital status, might affect eligibility. The purpose of the Myths Letter was also to de-stigmatize the take-up of means-tested benefits. The title of this letter was: "280,000 pensioners receive Housing Allowance today – are You eligible, too?".

The Rules of Thumb Letter showed, in addition to the information provided in the Base Letter, three examples of the possible level of allowance given three different combinations of income and wealth. The purpose of this letter was to make the eligibility criteria with respect to income and wealth more transparent. Previous studies have shown that a significant share of the eligible non-receiving population have false beliefs about how much income and wealth you may have and still qualify (Riksrevisionen, 2013). The rules of thumb might help people overcome the rather complicated eligibility calculation.

Finally, the Table Letter showed nine potential combinations of income and wealth and the resulting housing allowance. Thus, this letter was similar in spirit to the Rules of

Thumb Letter except that it included more detailed information on wealth and income criteria (and presented in table form).

### 3.3 Data and Descriptive Statistics

The data for the analysis were provided by the Swedish Pensions Agency. For all individuals in the main sample (see Section 3.1), we have information on age, gender, marital status, place of residence, and benefits from the public pension. There is additional information for those who actually applied for the housing allowance. This information is obviously related to the eligibility criteria of the housing allowance and include second and third pillar pension income, income from capital, labor and self-employment, co-habiting status, and housing costs.

Table A1 reports summary statistics by treatment status. As expected, the majority in the sample are women (around 73%). The average age is 76, but the spread is quite large (10% are 89 years or older). The average monthly public pension is approximately SEK 8,500.

We run a number of balancing tests, implemented through a series of regressions, to ensure that the treatment samples are similar across the observed variables. The first hypothesis is that receiving a letter does not have a predictive power for the level of covariates. Therefore, for each covariate  $x_j$  and using the main sample, we run the following regression

$$x_{ji} = \alpha + \mu_j \cdot \text{Letter}_i + \epsilon_i, \quad (1)$$

and the null hypothesis is that for each  $j$ ,  $H_0 : \mu_j = 0$ . The second hypothesis is that all letters have the same predictive power for the level of covariates. Therefore, for each covariate  $x_j$  and using the treated sample, we run the following regression

$$x_{ji} = \alpha + \mu_{j1} \cdot \text{Myths}_i + \mu_{j2} \cdot \text{RoT}_i + \mu_{j3} \cdot \text{Table}_i + \epsilon_i. \quad (2)$$

and the null hypothesis is that for each  $j$  and  $k$ ,  $H_0 : \mu_{jk} = 0$ .

Columns 1, 3 and 5 in Table A2 show the balancing of receiving a letter, that is, estimates of regression (1). While there are no significant differences between the control and the treatment group with respect to gender and age, the treatment group individuals

receive a significantly higher public pension than the individuals in the control group. However, the differences, SEK 49.5 are economically insignificant, or less than 0.6% of the average monthly pension in the control group. We therefore conclude that these two groups are very similar and that randomization into control and treatment has been successful. When considering the randomization of letters separately, equation (2), the significant difference in pension disappears (see columns 2, 4 and 5 in Table A2). Women are however more likely to receive the Myths and the Rule of thumb letter, but again, the differences are economically insignificant, with women being 75% of those receiving the Myths and Rule of Thumb letters as compared to 73% in the control sample. We therefore conclude that the randomization has in general been successful.

Figures A7 and A8 show the distribution of applications and subsequent decisions, respectively. We include applications that arrived at the Pensions Agency before January 1, 2017, i.e. 4 months after the first set of letters were sent out. A decision is generally taken within 1–2 months after the submission.

## 4 Results

Figure A9 shows the share of subjects with submitted, accepted and rejected application by treatment. There are clear differences between the results of the control and the treatment groups for all outcomes. The submission rate is highest amongst pensioners receiving the Myths Letter, but otherwise somewhat similar. The Myths Letter is also associated with the highest acceptance and rejection rate.

Our main results come from linear probability models for each outcome, application submission and acceptance of an application, but we also estimate the effect of treatment and submission on the level of housing allowance.

### 4.1 Response to receiving a letter

In the first specification, we estimate the effect of receiving a letter in contrast to not receiving any letter,

$$\mathbb{P}(y_i = 1) = \alpha + \mathbf{X}_i\boldsymbol{\beta} + \delta\text{Letter}_i + \varepsilon_i \quad (3)$$

where  $y_i$  is a dummy for either an application submission or an acceptance of an application for subject  $i$ ,  $\mathbf{X}_i$  is a vector of covariates, and  $\text{Letter}_i$  is a dummy indicating that a letter was received. The acceptance variable is coded as 0 if a subject does not submit an application. The vector of covariates includes a female dummy (*Female*), age dummies by year (*Age dummies*) and public pension decile dummies (*Pension decile*).

The results from estimating specification (3) are shown in the first two columns of Tables A3 and A4, respectively, using submission and acceptance as outcomes. The treatment effects are generally significant and the point estimates are stable to the introduction of covariates. Receiving a letter almost sevenfolds the probability of a pensioner submitting an application. The probability increases by 9.3 percentage points, from 1.4 percent (see the first two columns in Table A3). Due to the increased submission rate, a letter more than fourfolds the probability of a pensioner receiving housing allowance. The probability increases by 4.4 percentage points, from 1.0 percent (see the first two columns in Table A4).

The first two columns in Table A5 show that the acceptance, conditional on submission, is significantly lower amongst subjects that received a letter than in the control group, 50 percent and 73 percent respectively. That is, about half of the treated subjects who submitted an application for housing allowance were not eligible to receiving allowance.

We also investigate the effect of receiving a letter on the benefit amount. The specification we estimate is

$$\text{HA}_i = \alpha + \mathbf{X}_i\boldsymbol{\beta} + \delta\text{Letter}_i + \varepsilon_i, \quad (4)$$

where HA is the housing allowance amount in Swedish Krona (SEK) and  $\mathbf{X}_i$  is the same covariate vector as in equation (3). Table A6, columns 1 and 2, show that the information intervention increased the average housing allowance by SEK 69. This rather small number reflects the fact that only one-tenth of the letter recipients chose to apply.

Another more interesting outcome is therefore the corresponding effect on those who where induced by the treatment to apply. To investigate this, we run an IV estimate of submission on housing allowance, and the ratio of housing allowance to pension, where

submission is instrumented with treatment status. That is,

$$HA_i = \alpha + \delta_{HA}\hat{s}_i + \epsilon_i, \quad (5a)$$

where  $\hat{s}_i$  is the predicted value of submission from the first stage,

$$s_i = \alpha_s + \delta_s \text{Letter}_i + \epsilon_i. \quad (5b)$$

We also use the fraction of housing allowance to public pension as a dependent variable.

The results, displayed in columns 1 and 2 in Table A7, show that those who were induced by the treatment to apply, on average received housing allowance of around SEK 745, or about 10 percent of the amount they had in public pension. Note that this is slightly lower than the average housing allowance of SEK 873 among treatment group applicants (see column 3 in Table A6). The reason is that those who would have applied even without the treatment receive higher housing allowance than those that are induced to apply by the treatment.

In line with our previous finding that individuals in the treatment group are less likely to have an accepted application, Table A6 also shows that the treatment group applicants on average receive smaller amounts than the control group applicants. Conditional on acceptance (columns 5 and 6), the control group receives on average SEK 2,380, in contrast to the treatment group's average of SEK 1,735. The difference of SEK 645 corresponds to almost 30 percent of the average housing allowance among the control group recipients. Figure A14 illustrates these differences in a histogram, showing that the distribution of housing allowances in the treatment group is more skewed to the left than the corresponding control group distribution.

To understand what disqualifies the treatment group applicants, Figures A15-A17 show the distribution of public pension, occupational pension and wealth, respectively, conditional on submission and acceptance for both groups. From Figures A15 and A16 we conclude that the higher rejection rate in the treatment group neither can be attributed to differences in public pension nor occupational pension. Interestingly, however, Figure A17 reveals important differences in wealth. The distribution of wealth in the control group is more left-skewed, implying lower levels of wealth and hence a higher likelihood of acceptance. In particular, around half of the treatment group applicants have non-

positive wealth compared to 65 percent in the control group.

We want to emphasize two implications of the result that the treatment group applicants have higher rejection rates and lower benefit levels. First, many letters were sent to ineligible individuals. Basing selection only on public pension income clearly misses important financial information that might disqualify individuals for the housing allowance, such as wealth. Second, many individuals applied despite being ineligible. This could either be due to difficulties in calculating eligibility status (complex benefit criteria) or low costs of applying, or a combination of both.

## 4.2 Response to each letter

We now turn to the specific responses to the different letters. To make the result tables more tractable, we drop the control group and use those who received the base letter as the reference group. That is, we separately estimate the effect of receiving the *Myths*, Rule of Thumb (*RoT*), and the *Table* letter, in contrast to receiving the base letter,

$$\mathbb{P}(y_i = 1) = \mathbf{X}_i\boldsymbol{\beta} + \delta_1\text{Myths}_i + \delta_2\text{RoT}_i + \delta_3\text{Table}_i + \varepsilon_i, \quad (6)$$

using the same covariates as in specifications (3) and (4). The results from estimating equation (6) are shown in column 3 and 4 of Tables A3 and A4.

Subjects respond strongest to the Myths Letter and weakest to the Base Letter. The share of submitted applications among pensioners receiving the Myths Letter and the Base letter are, respectively, 12.1 percent and 9.9 percent, and statistically significantly different. Furthermore, when compared to the Rule of Thumb and the Table Letters, the treatment effect of the Myths Letter is significantly different at the five percent and the ten percent level, respectively (see results of F-tests in column 3 and 4 of Table A3).

Turning to acceptance, Table A4, we see again that the Myths Letter generates the largest response compared to the Base Letter. The average effect on the number of accepted applications is 32 percent larger amongst pensioners receiving the Myths Letter than amongst those receiving the Base Letter, 6.1 percent and 4.6 percent, respectively.

Finally, from columns 3 and 4 in Table A5 we see that the acceptance rate conditional on submission is significantly higher amongst treated subjects receiving the Rule of Thumbs letter compared to the other letters. This suggests that demonstrating the

eligibility criteria using simple examples may be an effective tool to get eligible individuals to apply.

### 4.3 Heterogeneity of Responses

Figure A10 shows the heterogeneity in submission rates by age, gender and public pension, and Figure A11 the heterogeneity in acceptance rates. The elderly (80+) and the poor (below median pension) are more likely to apply. Similarly, older pensioners and those with pension below median are more likely to have an accepted application. The probability of submitting and getting accepted is highest amongst females that receive the Myth Letter, while among males, the share of submission was highest amongst those receiving the Base Letter. In general, the overall application rates and acceptance rates are quite equal between genders.

We now turn to the corresponding estimated treatment effects. Tables A8 and A9 show the submission and acceptance heterogeneity in response to a letter with respect to gender, age and public pension income. We estimate the following specifications

$$\mathbb{P}(y_i = 1) = \alpha^0 + \beta^0 Z_{ji} + \delta_1^0 \text{Letter}_i + \delta_{j2}^0 \text{Letter}_i Z_{ji} + \varepsilon_i, \quad (7)$$

$$\mathbb{P}(y_i = 1) = \alpha + \mathbf{Z}_i \boldsymbol{\beta} + \delta_1 \text{Letter}_i + \text{Letter}_i \mathbf{Z}_i \boldsymbol{\delta}_2 + \varepsilon_i, \quad (8)$$

where  $Z_{ji}$ ,  $j = 1, 2, 3$  are the variables of interest; (1) female, (2) being older than 80 years old, and (3) having public pension above median, and  $\mathbf{Z}_i$  is a  $1 \times 3$  vector with the variables of interest. The treatment effect in the base groups ( $Z_{ji} = 0$  for each  $j$  and  $\mathbf{Z}_i = \mathbf{0}$ ) is captured by  $\delta_1$ . The parameters of interest are  $\delta_{j2}^0$  and the vector  $\boldsymbol{\delta}_2$ , which tell us each group  $j$ 's treatment effect (receiving a letter vs. not receiving any letter at all) in comparison to the base group.

The results for probability of submission are in line with the graphical evidence. In general, older pensioners and those with lower income are more likely to respond to a treatment, while gender plays a smaller role. The relatively old (80+) pensioners receiving a letter are about 46 percent more likely to respond to a letter than those who are below 80 years old (13.7 percent and 9.4 percent respectively).<sup>8</sup> Also, pensioners with

---

<sup>8</sup>We have also interacted the treatment dummy with 5-year age intervals to investigate the age effect in more detail. The results (not reported) revealed that individuals aged 71-75 were only somewhat more likely to respond than those aged 65-70. The magnitude of the response across the remaining age groups

pension income below median are about 21 percent more likely to respond to a letter than those that have income below median (12.1 percent and 10.0 percent respectively). However, the larger response of low income pensioners is possibly driven by them being older. Using simultaneously all the interaction terms mentioned above does not alter the point estimate on old age much, but the point estimate of the effect of having public pension income above median shrinks towards zero, and only the coefficient on old age remains significant (column 4). As seen in Table A9, the heterogeneity in acceptance rate follows a similar pattern, and the coefficient on old age is the only coefficient that remains significant when all interaction terms are simultaneously estimated.

Table A10 shows the results from estimation of specification (6) using subsamples of treated individuals specified above. That is; (1) by gender, (2) by age, namely older than 80 years old (*Old*), and those who are 80 years old and younger (*Young*), and (3) by pension income, namely, pensioners with pension income above and below median (*High* and *Low*).

As seen from columns 1 and 2, females respond more strongly to the Myths Letter than any other letter. Comparing females' treatment effect to the Myths Letter to other letters, we find a statistically significant difference at the 5 percent level for all letters except for the Table Letter, which is significant at the 10 percent level. To the contrary, we find very little treatment heterogeneity among males. When considering the relatively old (columns 5 and 6), the response rate is also highest amongst those who receive the Myths Letter, but not statistically significant (possibly due to lower statistical power). Furthermore, the response amongst the older group is lowest for those who receive the Table Letter, and statistically significantly different from the response to the Myths Letter. Similarly young, respond strongest to the Myths Letter, but otherwise they show little treatment heterogeneity. Finally, subjects with high pension income respond strongest to the Myth Letter, while there is little heterogeneity in the response of subjects with low pension. We have also made the corresponding analysis for the acceptance outcome. Similar patterns are revealed from that analysis, but with lower level of significance (not reported).

Our general conclusion from the heterogeneity analysis is that the framed letters did not differentially affect different groups of workers compared to the Base Letter, with the possible exception of the Myths Letter which affected females and those with high (i.e. 76+) was relatively similar.

income more strongly.

## 5 Conclusion

This paper reports the results from a randomized field experiment investigating whether receiving an information letter affects the take-up rate of housing allowance for pensioners. We also investigate whether the framing of the information letter affects take-up. The experiment was carried out in collaboration with the Swedish Pensions Agency

The sample for the field experiment consisted of 95,512 single, low-income pensioners and was drawn in May 2016, three months prior to the mailings. Four different letters were sent out to 10,000 subjects (2,500 subjects each), and those who received no letter make up the control group. The information in the most simple letter, the Base Letter, was re-produced in the other three letters with a slight addition about common misconceptions about the benefit (the Myths Letter), three simple examples of the possible level of allowance for different combinations of income and wealth (the Rule of Thumbs letter), and nine potential combinations of income and wealth and the resulting housing allowance (the Table Letter). Applications were collected up until December 23, 2016.

The results show that simple information letters had a dramatic effect on the application rate and subsequent take-up. The baseline application rate in the targeted control population was only 1.4 percent, while the corresponding rates in the different treatment groups were between 9.9 and 12.1 percent. The only framed letter that had a significantly different effect from the Base Letter on the probability of submission was the Myths Letter. This group had the highest application rate of 12.1 percent compared to the basic letter of 9.9 percent. The only letter that led to a significantly higher share of eligible applicants (i.e. a higher conditional acceptance rate) compared to the BaseLetter was the Rule of Thumbs Letter.

The letters had a significant effect on take-up within various sub-groups. The elderly (80+) and the poor (below median pension) were more likely to apply as well as submit an accepted application. In fact, the relatively old pensioners receiving a letter were 46 percent more likely to respond to a letter than their younger counterparts. Pensioners with low income were 21 percent more likely to submit an application. These effects are more likely driven by age than income, since only the interaction term for age re-

mains significant when we include other interaction terms. The probability of submitting and getting accepted was highest amongst females that received the Myth Letter, while among males, the Base Letter had the largest effect on the probability of submission.

There are two implications of this research. From the perspective of the policy maker, these information interventions could be an effective tool to increase the take-up rate of the housing allowance. Scaling up these interventions to the broader population of (eligible) non-claimants can be done at relatively low cost, e.g. by including the information in the personalized Orange Letter that is sent out yearly by the Pensions Agency to all individuals that is part of the pension system (savers as well as pensioners). However, if this is to be done, it is important that the eligibility of individuals can be assessed properly. Our results show a strong positive self-selection among the applicants in the control group and that the information letters pushes some individuals to apply even though they are not eligible. We find that the higher rejection rate in the treatment group neither can be attributed to differences in public pension nor occupational pension, but to wealth. Another option could be to send out this information to pensioners who experience an important life change which may affect eligibility, such as the loss of a husband or wife.

A second implication applies to the literature that addresses the various factors that might explain why individuals do not apply for the benefits they are entitled to. Given the dramatic impact of receiving a letter, and the modest differences between different letter framings, we conclude that the primary explanation for the low take-up rate among poor elderly is low awareness. A secondary explanation is misconceptions about the eligibility criteria. We cannot evaluate the role of transaction costs since all letters had an attached form. However, survey evidence suggests that they are not perceived as the main reason for not applying.

## References

- Bettinger, E. P., B. T. Long, P. Oreopoulos, and L. Sanbonmatsu (2012). The Role of Application Assistance and Information in College Decisions: Results from the H&R Block FAFSA Experiment. *The Quarterly Journal of Economics* 127(3), 1205–1242.
- Bhargava, S. and D. Manoli (2015). Psychological Frictions and the Incomplete Take-Up

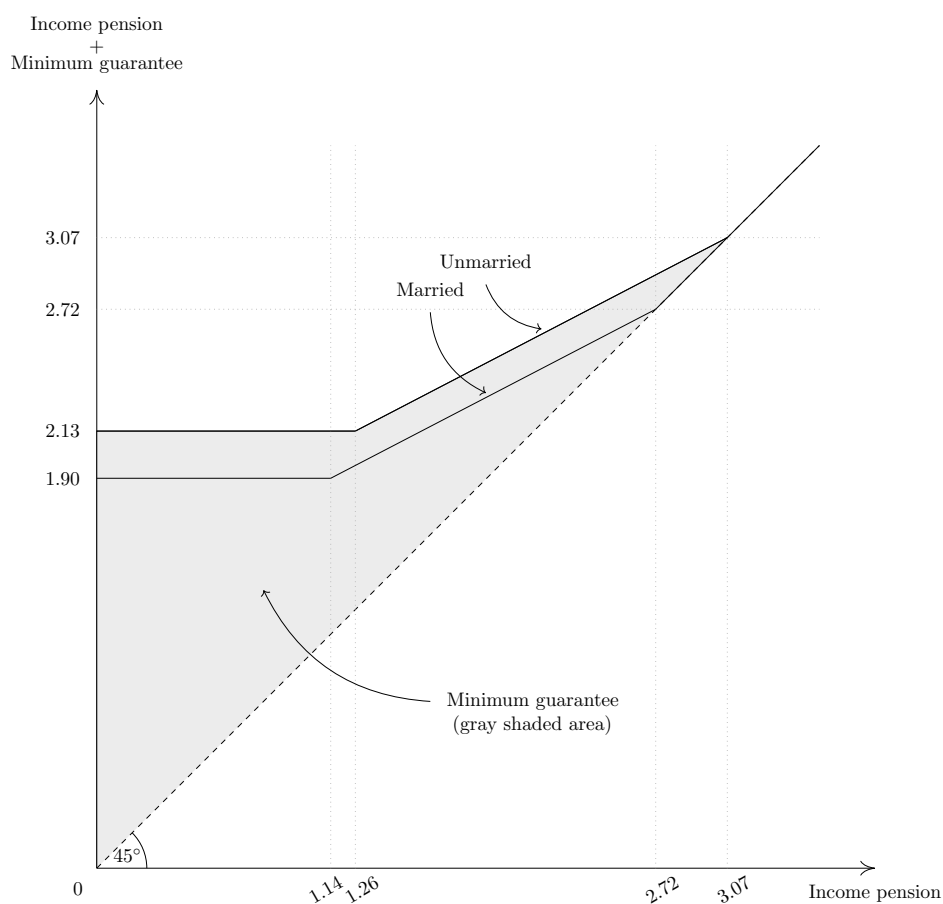
- of Social Benefits: Evidence from an IRS Field Experiment. *The American Economic Review* 105(11), 3489–3529.
- Currie, J. (2006). The Take-Up of Social Benefits. In A. Auerbach, D. Card, and J. M. Quigley (Eds.), *Poverty, The Distribution of Income and Public Policy*, pp. 80–148. New York: Russell Sage.
- Försäkringskassan (2007). Mörkertalet och BTP. (Försäkringskassan dnr. 39635-2007).
- Hagen, J. (2017). Pension Principles in the Swedish Pension System. *Scandinavian Economic History Review* 65(1), 28–51.
- Liebman, J. B. and E. F. P. Luttmer (2015, February). Would People Behave Differently If They Better Understood Social Security? Evidence from a Field Experiment. *American Economic Journal: Economic Policy* 7(1), 275–99.
- Mastrobuoni, G. (2011). The Role of Information for Retirement Behavior: Evidence Based on the Stepwise Introduction of the Social Security Statement. *Journal of Public Economics* 95(7), 913 – 925.
- Matikka, T. and T. Paukkeri (2016). Does Information Increase the Take-Up of Social Benefits? Evidence from a New Benefit Program. *VATT Working Papers* 83.
- Riksrevisionen (2013). *Bostadstillägg och äldre försörjningsstöd till pensionärer – när förmånerna fram?* RiR 2013:7. Stockholm: Riksdagens internttryckeri.
- Zantomio, F. (2015). The Route to Take-up: Evidence from the UK Pension Credit Reform. *Oxford Bulletin of Economics and Statistics* 77(5), 719–739.

# Appendix

## A1 Figures

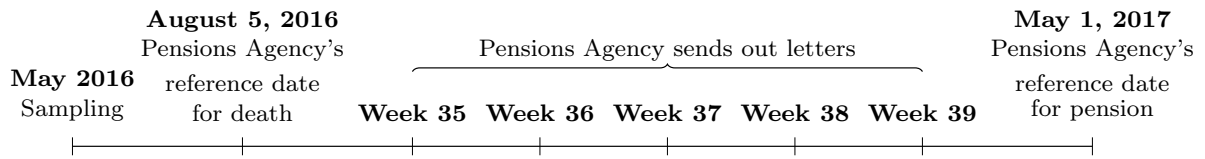
### A1 Institutions and Letters

**Figure A1.** The relationship between the income pension and the minimum guarantee in the public pension system



*Note:* Annual pension in price related base amounts (1 base amount in 2016 = SEK 44,300). The corresponding monthly amounts in SEK 2016 are: SEK 4,208 (1.14), SEK 4,652 (1.26), SEK 7,014 (1.90), SEK 7,863 (2.13), SEK 10,054 (2.72) and SEK 11,343 (3.07). The grey shaded area denotes the size of the minimum guarantee (the vertical distance between the dashed 45° line and the solid lines).

**Figure A2.** Timeline



*Note:* The sample for the field experiment was drawn in May 2016. The Pensions Agency did not send letters to sampled subjects that deceased before August 5, 2016. Therefore, subjects that deceased before August 5, 2016, were dropped from the sample. Three months after the sampling, during week 35 (August 29 to September 4) to week 39 (September 26 to October 2) 2016, the four different information letters were sent out. Finally, subjects with a value for pension are dropped. Most of these deceased before end of April 2017, while 59 subjects (of which 7 receive a letter) have missing value for pension for an unknown reason.

**Figure A3.** The Base Letter

|                                       |      |                 |
|---------------------------------------|------|-----------------|
| <b>PENSIONS</b><br><b>MYNDIGHETEN</b> | Date | Personal number |
|---------------------------------------|------|-----------------|

## Have You Heard about the Housing Allowance?

**Why we contact you**  
We know that there are many pensioners who may be eligible for housing allowance, but who have not applied for it. Information that the Pensions Agency has show that you could be one of them and that is why we contact you.

A simple rule-of-thumb that we have, which applies to single households, is that if you have low wealth and a monthly after-tax income per month of SEK 13,000 or less you might be eligible for housing allowance. If you are married, or have a co-habiting partner, the income and wealth thresholds are somewhat lower.

**Make a calculation before you apply**  
Before you decide to apply we encourage you to make a simple calculation on our homepage: [www.pensionsmyndigheten.se/BeraknaBostadstillagg.html](http://www.pensionsmyndigheten.se/BeraknaBostadstillagg.html). This calculation tool gives a preliminary indication of your eligibility status. If you do not have access to a computer you can contact our customer service at 0771-776 776 who will assist you in making the calculation.

**Applying for the housing allowance**  
The easiest way to apply is via our homepage or by filling out one of the enclosed application forms. Which form you should use depends on whether you have co-habiting partner or not.

**Disbursement**  
After you have submitted your application you will be notified whether you are eligible for the housing allowance or not. If you are eligible, you will also receive information on the size of the allowance.

**What is housing allowance?**  
The housing allowance is a supplement to the public pension and you turn to us at the Pensions Agency to apply for it. Whether you are eligible, and how much you would get if so, depends on your housing costs, your wealth and your income.

*Best regards,  
The Pensions Agency*

**Figure A4.** The Myths Letter

|                                       |      |                 |
|---------------------------------------|------|-----------------|
| <b>PENSIONS</b><br><b>MYNDIGHETEN</b> | Date | Personal number |
|---------------------------------------|------|-----------------|

**280,000 pensioners receive housing allowance today  
– are you eligible, too?**

**Did you know that:**

- It does not matter whether you live in a rental apartment, a condominium, a house that you own or in some other type of housing – you may still apply for the housing allowance. The value of your house or condominium does not count as wealth.
- If you have low income you may still have some wealth (bank deposits, funds/stocks, summer house etc.)
- If you live together with others you may still apply for housing allowance
- Surveys have shown that many retirees lose this pension supplement because they never applied
- If something changes in life – for example if you move, your income changes or start to live on your own – this might affect your eligibility status

[Base letter content (from first heading)]

**Figure A5.** The Rules of Thumb Letter

|                                       |      |                 |
|---------------------------------------|------|-----------------|
| <b>PENSIONS</b><br><b>MYNDIGHETEN</b> | Date | Personal number |
|---------------------------------------|------|-----------------|

Have you heard about the housing allowance?

**Why we contact you**  
We know that there are many pensioners who may be eligible for housing allowance, but who have not applied for it. Information that the Pensions Agency has show that you could be one of them and that is why we contact you.

The examples below give you an indication about your chances of getting the housing allowance, depending on your income, potential wealth (bank deposits, bonds/stocks, summer house etc.). The examples apply to single households. You may also qualify for the housing allowance if you are married or have a co-habiting partner, but then other income thresholds apply.

| You can get a housing allowance of... | if you have...                                                        |
|---------------------------------------|-----------------------------------------------------------------------|
| SEK 900                               | SEK 10,000 per month after tax +<br>net wealth of SEK 300,000         |
| SEK 1,000                             | SEK 12,000 per month after tax +<br>net wealth of maximum SEK 100,000 |
| SEK 1,900                             | SEK 7,000 per month after tax +<br>net wealth of SEK 500,000          |

Note that these examples use approximate numbers. The numbers are therefore not applicable to everyone, but they can give you an indication of how income and wealth affect the housing allowance. The numbers are for example not correct if your housing costs are below SEK 5,000.

[Base letter content (from second heading)]

**Figure A6.** The Table Letter

PENSIONS  
MYNDIGHETEN

Date

Personal number

Have you heard about the housing allowance?

**Why we contact you**

We know that there are many pensioners who may be eligible for housing allowance, but who have not applied for it. Information that the Pensions Agency has show that you could be one of them and that is why we contact you.

Whether you are eligible, and how much you would get if so, depends on your housing costs, your wealth and your income. In the table below, there are several examples that show the size of the housing allowance that you can get, depending on your income and wealth (bank deposits, bonds/stocks, summer house etc.). The examples apply to single households. You may also qualify for the housing allowance if you are married or have a co-habiting partner, but then other income thresholds apply. The top row shows monthly after-tax income while the left-most column shows wealth.

| Monthly housing allowance (SEK) |                         |                          |                          |
|---------------------------------|-------------------------|--------------------------|--------------------------|
| Wealth                          | Monthly income<br>7,000 | Monthly income<br>10,000 | Monthly income<br>12,000 |
| 0 – 100,000                     | 5,090                   | 2,300                    | 1,000                    |
| appr 300,000                    | 3,300                   | 900                      | 0                        |
| appr 500,000                    | 1,900                   | 0                        | 0                        |

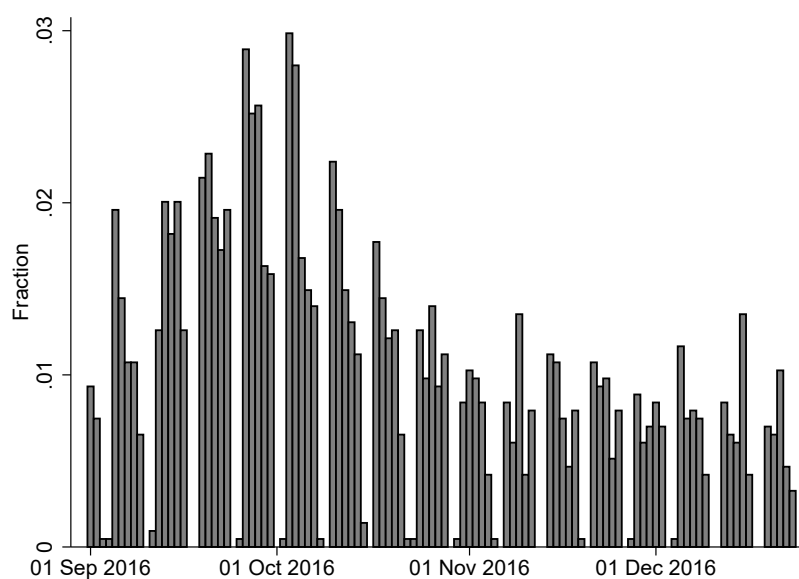
*Example: If your monthly after-tax income is SEK 10,000 and your wealth is SEK 300,000 you may be eligible for a housing allowance of SEK 900 per month.*

Note that these examples use approximate numbers. The numbers are therefore not applicable to everyone, but they can give you an indication of how income and wealth affect the housing allowance. The numbers are for example not correct if your housing costs are below SEK 5,000.

[Base letter content (from second heading)]

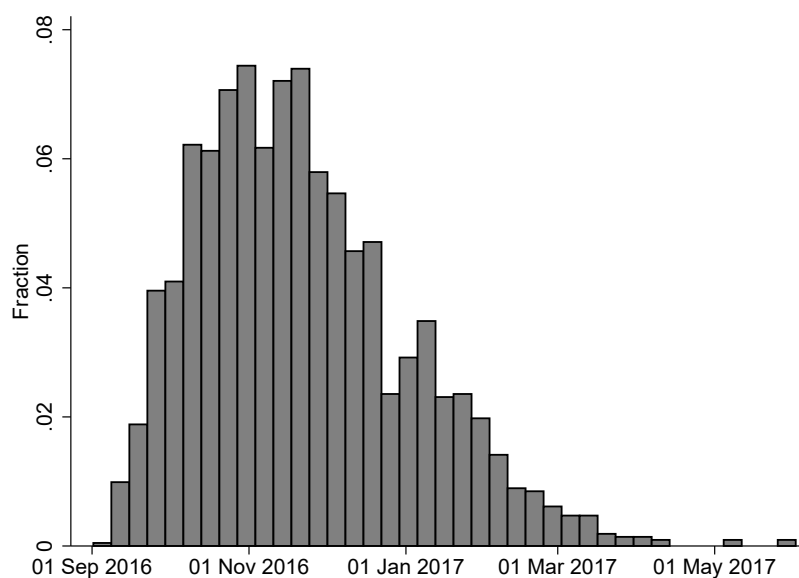
## A2 Response

**Figure A7.** Date of application submission



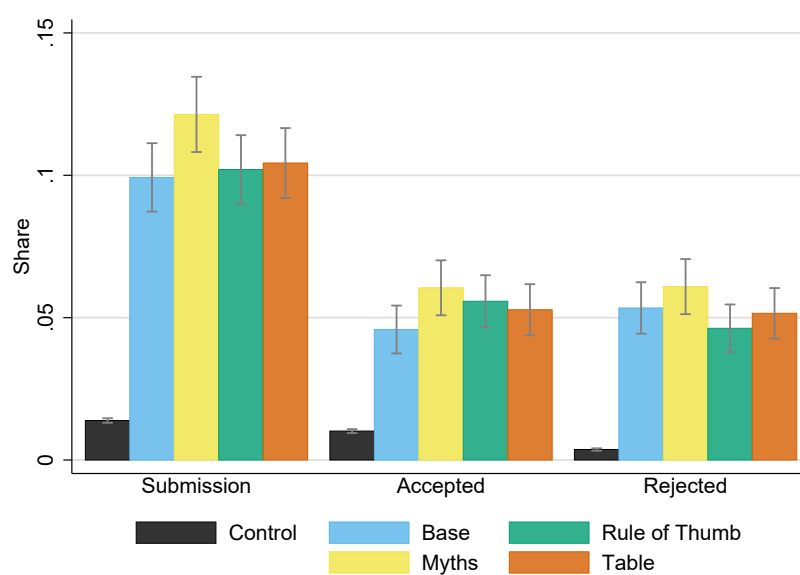
*Note:* Histogram of pensioners' application submission dates. Each bar represents a day, starting on 1 September 2016 and ending on 23 December 2016.

**Figure A8.** Date of decision taken by Pensions Agency



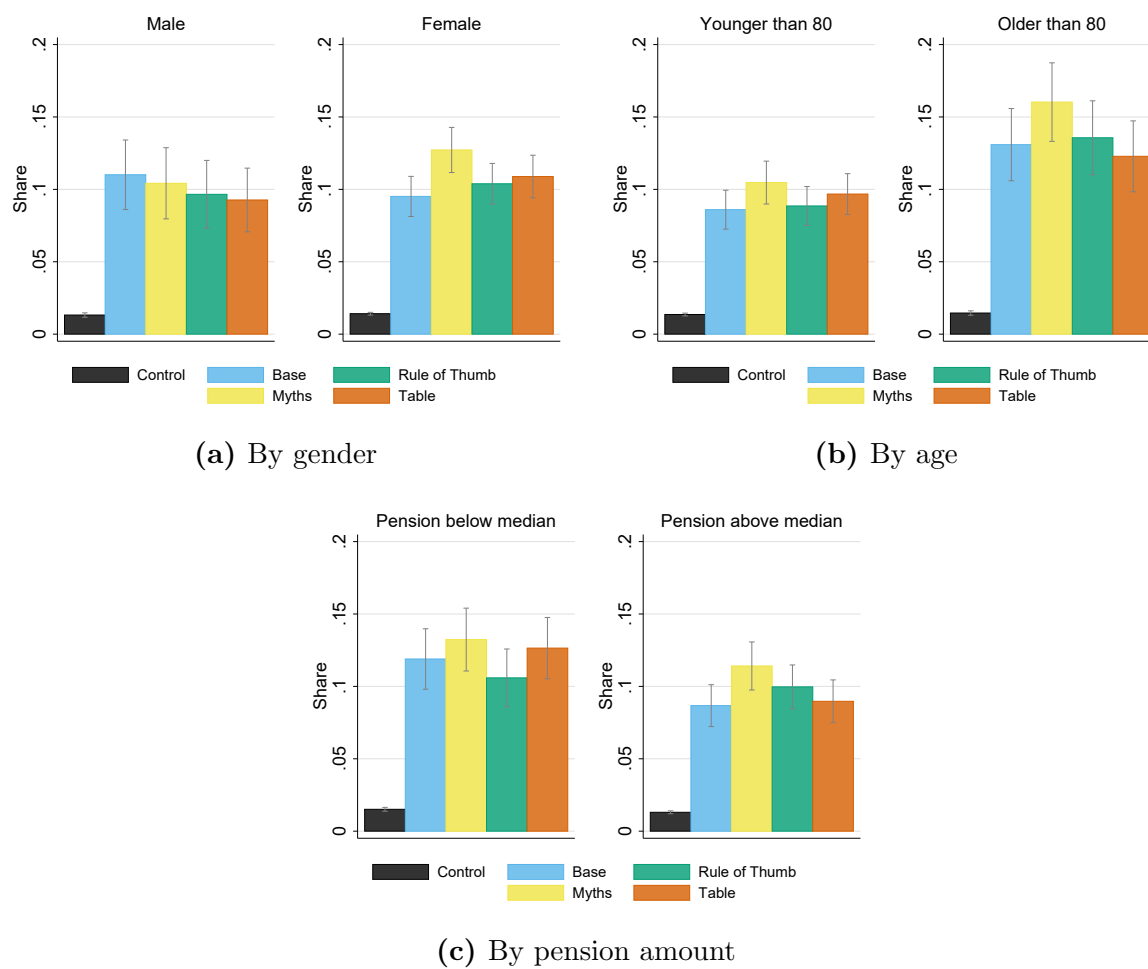
*Note:* Histogram of Pensions Agency's application decision dates. Each bar represents a week, starting on week 36 2016 and ending on week 22 2017.

**Figure A9.** Pensioners' response and Pensions Agency's decision



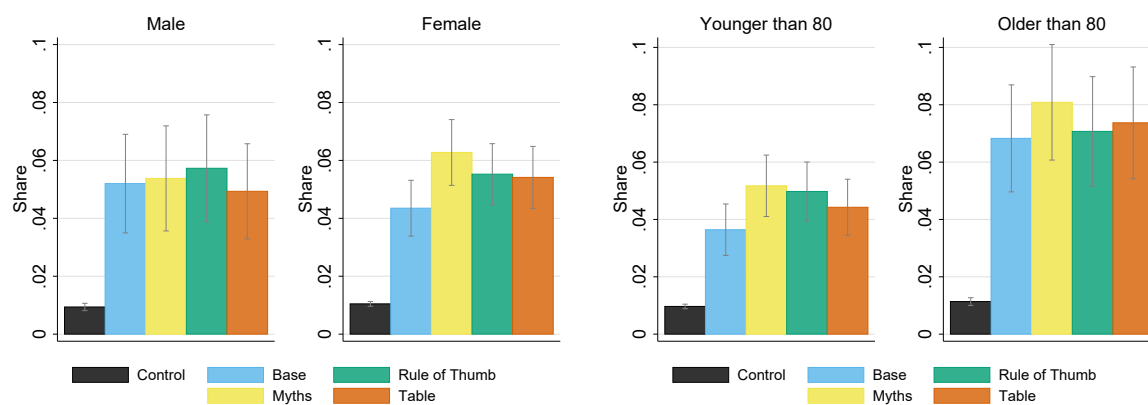
*Note:* The share of subjects with submitted, accepted and rejected applications by treatment.

**Figure A10.** Submission heterogeneity



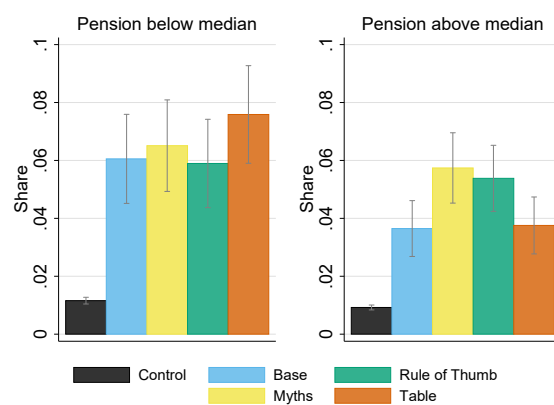
*Note:* The share of subjects with submitted applications by treatment and demographic variables.

**Figure A11.** Acceptance heterogeneity



(a) By gender

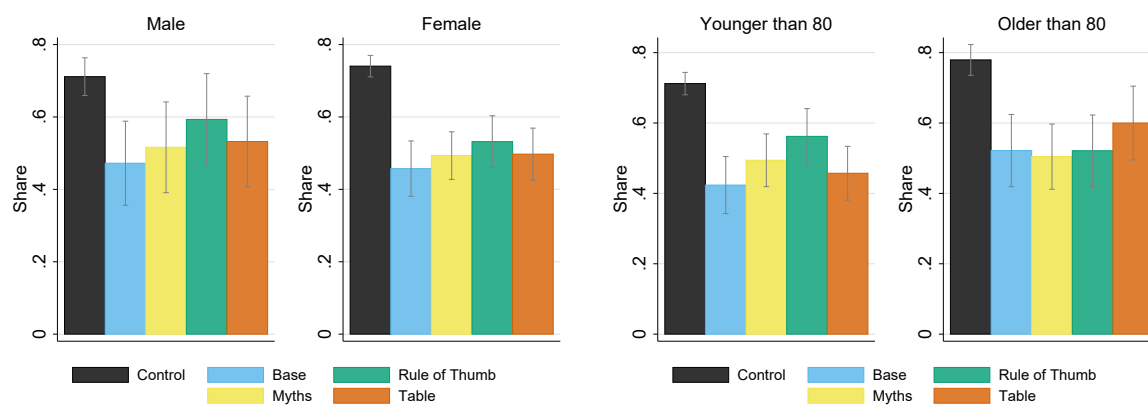
(b) By age



(c) By pension amount

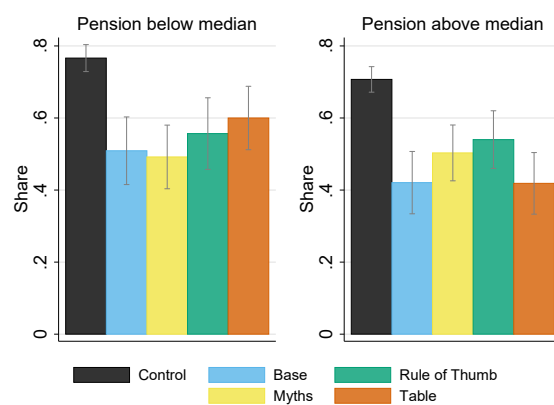
*Note:* The share of subjects with accepted applications by treatment and demographic variables.

**Figure A12.** Acceptance heterogeneity conditional on submission



(a) By gender

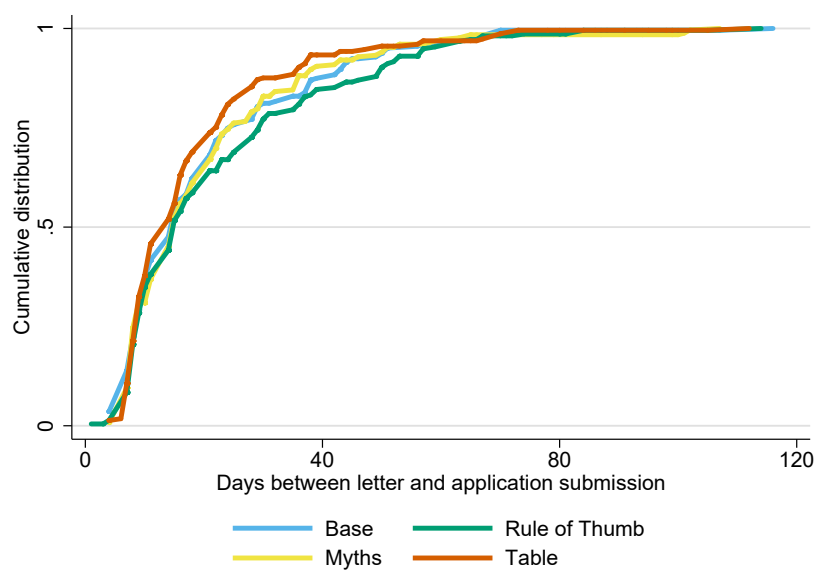
(b) By age



(c) By pension amount

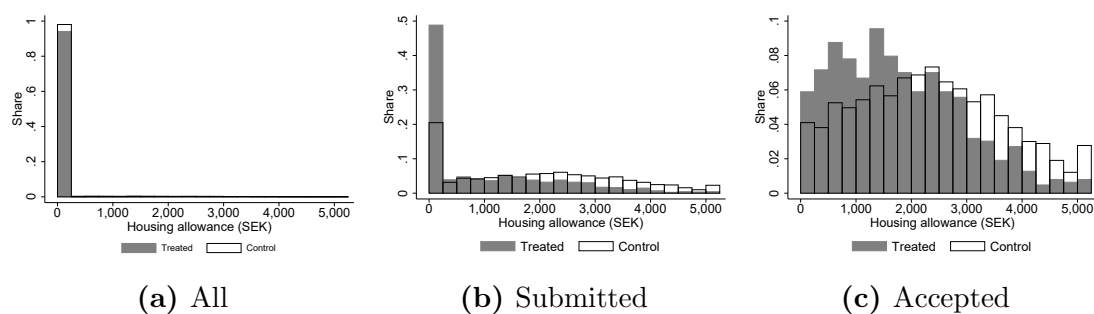
*Note:* The share of subjects with accepted applications conditional on submission by treatment and demographic variables.

**Figure A13.** Cumulative distribution of time between a letter was sent out and application submission by letter

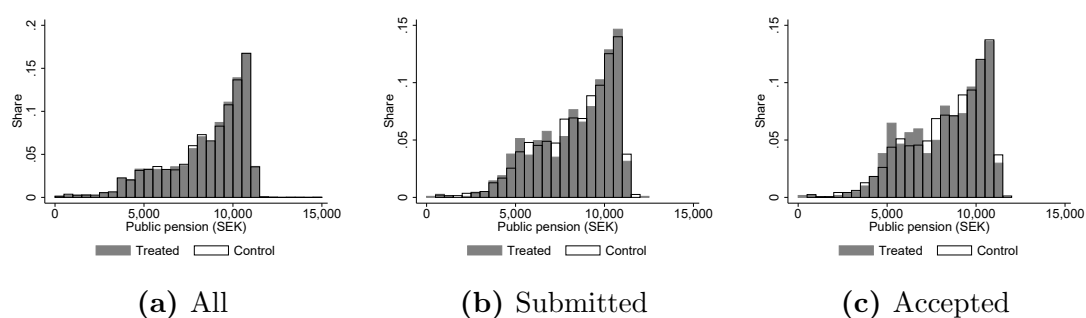


### A3 Descriptive statistics

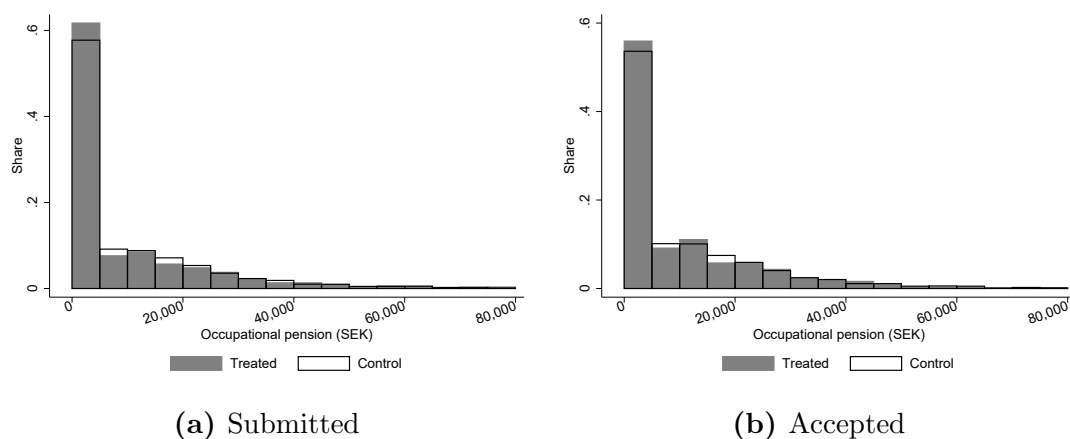
**Figure A14.** Housing allowance



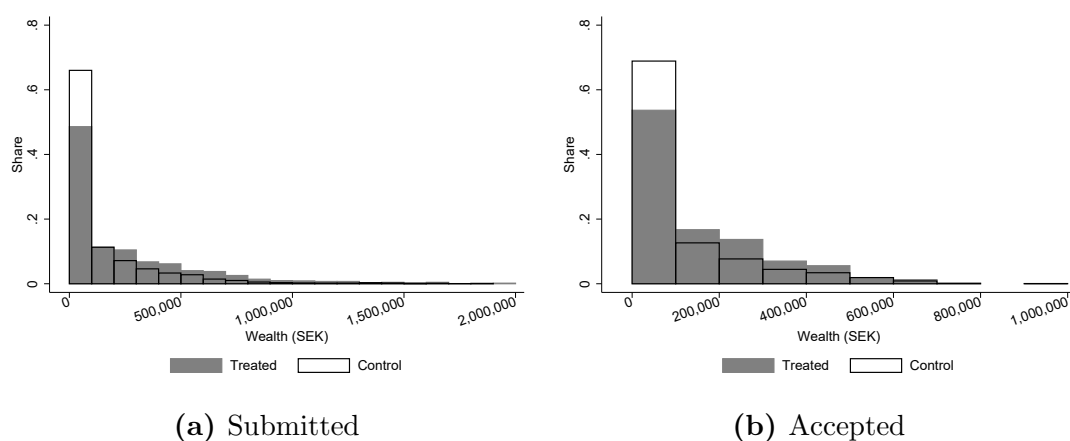
**Figure A15.** Public pension



**Figure A16.** Occupational pension of pensioners submitting an application and receiving housing allowance



**Figure A17.** Wealth of pensioners submitting an application and receiving housing allowance



*Note:* Negative wealth is coded to zero.

## A2 Tables

**Table A1.** Descriptive statistics by treatment status

|         | Original         |                  |                  | Main             |                  |                  |                  |                  |                  |                  |
|---------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|         | Full             | Control          | Treated          | Full             | Control          | Treated          |                  |                  |                  |                  |
|         |                  |                  |                  |                  |                  | All              | Base             | Myths            | RoT              | Table            |
|         | (1)              | (2)              | (3)              | (4)              | (5)              | (6)              | (7)              | (8)              | (9)              | (10)             |
| Female  | .730<br>(.444)   | .729<br>(.444)   | .735<br>(.441)   | .729<br>(.444)   | .728<br>(.445)   | .735<br>(.441)   | .725<br>(.447)   | .747<br>(.435)   | .748<br>(.434)   | .72<br>(.449)    |
| Age     | 76.3<br>(8.9)    | 76.3<br>(8.9)    | 76.2<br>(9.0)    | 75.9<br>(8.7)    | 75.9<br>(8.7)    | 75.8<br>(8.8)    | 75.9<br>(8.7)    | 75.9<br>(8.8)    | 75.7<br>(8.7)    | 75.8<br>(8.8)    |
| Pension | 8,531<br>(2,278) | 8,526<br>(2,279) | 8,574<br>(2,269) | 8,532<br>(2,280) | 8,527<br>(2,281) | 8,576<br>(2,270) | 8,556<br>(2,268) | 8,566<br>(2,219) | 8,610<br>(2,314) | 8,572<br>(2,279) |
| N       | 95,512           | 85,499           | 10,013           | 90,758           | 81,224           | 9,534            | 2,378            | 2,348            | 2,421            | 2,387            |

*Note:* This table reports means and standard deviations (in parentheses) of subjects by treatment status. Columns 1 to 3, *Original*, shows the originally sampled pensioners who had not passed away before August 5, 2016. Column 1 shows the full *Original* sample, column 2, *Control*, is the subset of *Full* that does not receive any letter (the control group), and column 3, *Treated* is the subset that receives letters (the treatment group). Columns 4 to 10, *Main*, is the sample used in the analysis, and consists of the subjects in the *Original* sample that *i*) had not submitted an application before the experiment started (the first letters were sent out) and *ii*) did not have a missing value for public pension. Column 4 shows the full *Main* sample, column 5, *Control*, is the subset in the *Main* sample that does not receive any letter (the control group), and column 6, *Treated* is the subset that receives letters (the treatment group). Columns 7 to 10 show the treatment groups in the *Main* sample by letters; the Base, the Myths, the Rule of Thumb (*RoT*), and the Table letter respectively. *Pension* is public pension amount in Swedish Krona (SEK).

**Table A2.** Balancing tests

|                    | Female               |                      | Public pension       |                      | Age                 |                    |
|--------------------|----------------------|----------------------|----------------------|----------------------|---------------------|--------------------|
|                    | (1)                  | (2)                  | (3)                  | (4)                  | (5)                 | (6)                |
| Received a letter  | 0.0062<br>(0.00478)  |                      | 49.5**<br>(24.59)    |                      | -0.069<br>(0.0948)  |                    |
| Myths              |                      | 0.022*<br>(0.0128)   |                      | 9.77<br>(65.27)      |                     | -0.028<br>(0.255)  |
| RoT                |                      | 0.023*<br>(0.0127)   |                      | 53.9<br>(66.14)      |                     | -0.19<br>(0.251)   |
| Table              |                      | -0.0052<br>(0.0130)  |                      | 16.2<br>(65.88)      |                     | -0.13<br>(0.254)   |
| Constant           | 0.73***<br>(0.00156) | 0.72***<br>(0.00916) | 8526.5***<br>(8.003) | 8555.9***<br>(46.51) | 75.9***<br>(0.0305) | 75.9***<br>(0.179) |
| $R^2$              | 0.000                | 0.001                | 0.000                | 0.000                | 0.000               | 0.000              |
| N                  | 90,758               | 9,534                | 90,758               | 9,534                | 90,758              | 9,534              |
| Sample             | Main                 | Treat.               | Main                 | Treat.               | Main                | Treat.             |
| <u>F-test:</u>     |                      |                      |                      |                      |                     |                    |
| Joint significance |                      | 0.054                |                      | 0.859                |                     | 0.872              |
| Myths = RoT        |                      | 0.935                |                      | 0.502                |                     | 0.533              |
| Myths = Table      |                      | 0.037                |                      | 0.922                |                     | 0.703              |
| RoT = Table        |                      | 0.029                |                      | 0.569                |                     | 0.811              |

*Note:* Balancing tests for randomization of letters. Columns 1, 3 and 5 show results from specification (1), and columns 2, 4 and 6 show results from specification (2). Heteroskedasticity robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A3.** The effect of receiving a letter on application submission

|                    | Application submission |                    |                   |                   |
|--------------------|------------------------|--------------------|-------------------|-------------------|
|                    | (1)                    | (2)                | (3)               | (4)               |
| Received a letter  | 9.28***<br>(0.32)      | 9.28***<br>(0.32)  |                   |                   |
| Myths              |                        |                    | 2.21**<br>(0.91)  | 2.21**<br>(0.91)  |
| RoT                |                        |                    | 0.28<br>(0.87)    | 0.39<br>(0.87)    |
| Table              |                        |                    | 0.51<br>(0.88)    | 0.51<br>(0.87)    |
| Constant           | 1.39***<br>(0.04)      | -1.07***<br>(0.26) | 9.92***<br>(0.61) | 5.63***<br>(2.08) |
| Female             |                        | Yes                |                   | Yes               |
| Age dummies        |                        | Yes                |                   | Yes               |
| Pension decile     |                        | Yes                |                   | Yes               |
| $R^2$              | 0.035                  | 0.036              | 0.001             | 0.014             |
| N                  | 90,758                 | 90,758             | 9,534             | 9,534             |
| Sample             | Main                   | Main               | Treated           | Treated           |
| <u>F-test:</u>     |                        |                    |                   |                   |
| Joint significance |                        |                    | 0.075             | 0.080             |
| Myths = RoT        |                        |                    | 0.034             | 0.044             |
| Myths = Table      |                        |                    | 0.064             | 0.063             |
| RoT = Table        |                        |                    | 0.794             | 0.888             |

*Note:* The effect of receiving a letter on application submission. The dependent variable is a scaled by 100. When used, additional covariates to treatment status are a female dummy, age dummies (by year), and public pension decile dummies. Columns 1 and 2 show results from specification (3), and columns 3 and 4 show results from specification (6). Heteroskedasticity robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A4.** The effect of receiving a letter on application acceptance

|                    | Application<br>accepted |                    |                   |                  |
|--------------------|-------------------------|--------------------|-------------------|------------------|
|                    | (1)                     | (2)                | (3)               | (4)              |
| Received a letter  | 4.35***<br>(0.23)       | 4.36***<br>(0.23)  |                   |                  |
| Myths              |                         |                    | 1.46**<br>(0.65)  | 1.47**<br>(0.65) |
| RoT                |                         |                    | 0.99<br>(0.63)    | 1.02<br>(0.63)   |
| Table              |                         |                    | 0.69<br>(0.63)    | 0.70<br>(0.63)   |
| Constant           | 1.02***<br>(0.04)       | -0.56***<br>(0.21) | 4.58***<br>(0.43) | 2.69*<br>(1.53)  |
| Female             |                         | Yes                |                   | Yes              |
| Age dummies        |                         | Yes                |                   | Yes              |
| Pension decile     |                         | Yes                |                   | Yes              |
| $R^2$              | 0.012                   | 0.013              | 0.001             | 0.011            |
| N                  | 90,758                  | 90,758             | 9,534             | 9,534            |
| Sample             | Main                    | Main               | Treated           | Treated          |
| <u>F-test:</u>     |                         |                    |                   |                  |
| Joint significance |                         |                    | 0.142             | 0.134            |
| Myths = RoT        |                         |                    | 0.487             | 0.510            |
| Myths = Table      |                         |                    | 0.252             | 0.256            |
| RoT = Table        |                         |                    | 0.649             | 0.625            |

*Note:* The effect of receiving a letter on application acceptance. The dependent variable is a scaled by 100. When used, additional covariates to treatment status are a female dummy, age dummies (by year), and public pension decile dummies. Columns 1 and 2 show results from specification (3), and columns 3 and 4 show results from specification (6). Heteroskedasticity robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A5.** The effect of receiving a letter on application acceptance conditional on submission

|                    | Application accepted |                     |                     |                     |
|--------------------|----------------------|---------------------|---------------------|---------------------|
|                    | (1)                  | (2)                 | (3)                 | (4)                 |
| Received a letter  | -22.95***<br>(2.05)  | -23.47***<br>(2.08) |                     |                     |
| Myths              |                      |                     | 3.64<br>(4.40)      | 5.16<br>(4.55)      |
| RoT                |                      |                     | 8.47*<br>(4.54)     | 9.21**<br>(4.69)    |
| Table              |                      |                     | 4.42<br>(4.54)      | 5.54<br>(4.74)      |
| Constant           | 73.29***<br>(1.32)   | 69.71***<br>(6.39)  | 46.19***<br>(3.25)  | 48.04***<br>(12.09) |
| Female             |                      | Yes                 |                     | Yes                 |
| Age dummies        |                      | Yes                 |                     | Yes                 |
| Pension decile     |                      | Yes                 |                     | Yes                 |
| $R^2$              | 0.056                | 0.079               | 0.003               | 0.039               |
| N                  | 2,144                | 2,144               | 1,017               | 1,017               |
| Sample             | Submitted            | Submitted           | Treated & submitted | Treated & submitted |
| <u>F-test:</u>     |                      |                     |                     |                     |
| Joint significance |                      |                     | 0.319               | 0.274               |
| Myths = RoT        |                      |                     | 0.266               | 0.367               |
| Myths = Table      |                      |                     | 0.858               | 0.933               |
| RoT = Table        |                      |                     | 0.367               | 0.427               |

*Note:* The effect of receiving a letter on application acceptance conditional on submission. The dependent variable is a scaled by 100. When used, additional covariates to treatment status are a female dummy, age dummies (by year), and public pension decile dummies. Columns 1 and 2 show results from specification (3), and columns 3 and 4 show results from specification (6). Heteroskedasticity robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A6.** The effect of receiving a letter on housing allowance

|                   | Housing allowance |                  |                      |                       |                      |                       |
|-------------------|-------------------|------------------|----------------------|-----------------------|----------------------|-----------------------|
|                   | (1)               | (2)              | (3)                  | (4)                   | (5)                  | (6)                   |
| Received a letter | 69.0***<br>(4.9)  | 69.2***<br>(4.9) | -870.6***<br>(58.4)  | -890.6***<br>(58.5)   | -644.6***<br>(66.3)  | -662.3***<br>(65.5)   |
| Constant          | 24.2***<br>(1.0)  | -4.4<br>(5.7)    | 1,744.0***<br>(45.5) | 2,032.1***<br>(193.1) | 2,379.5***<br>(44.9) | 2,971.0***<br>(199.7) |
| Gender            |                   | Yes              |                      | Yes                   |                      | Yes                   |
| Age dummies       |                   | Yes              |                      | Yes                   |                      | Yes                   |
| Pension decile    |                   | Yes              |                      | Yes                   |                      | Yes                   |
| $R^2$             | 0.005             | 0.007            | 0.092                | 0.151                 | 0.062                | 0.164                 |
| N                 | 90,758            | 90,758           | 2,144                | 2,144                 | 1,338                | 1,338                 |
| Sample            | Main              | Main             | Submitted            | Submitted             | Accepted             | Accepted              |
| Model             | OLS               | OLS              | OLS                  | OLS                   | OLS                  | OLS                   |

*Note:* The effect of receiving a letter on housing allowance (equation (A2)). The dependent variable is a scaled by 100. When used, additional covariates to treatment status are a female dummy, age dummies (by year), and public pension decile dummies. Heteroskedasticity robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A7.** The effect of submission on housing allowance

|                        | Housing allowance  |                    | 100 . $\frac{\text{Housing allowance}}{\text{Pension}}$ |                  |
|------------------------|--------------------|--------------------|---------------------------------------------------------|------------------|
|                        | (1)                | (2)                | (3)                                                     | (4)              |
| Application submission | 743.2***<br>(43.1) | 745.8***<br>(43.1) | 10.2***<br>(0.8)                                        | 10.3***<br>(0.8) |
| Constant               | 13.9***<br>(1.0)   | 3.6<br>(4.6)       | 0.2***<br>(0.0)                                         | 0.6***<br>(0.1)  |
| Gender                 |                    | Yes                |                                                         | Yes              |
| Age dummies            |                    | Yes                |                                                         | Yes              |
| Pension decile         |                    | Yes                |                                                         | Yes              |
| $R^2$                  | 0.367              | 0.369              | 0.251                                                   | 0.255            |
| N                      | 90,758             | 90,758             | 90,757                                                  | 90,757           |
| Sample                 | Main               | Main               | Main                                                    | Main             |
| Model                  | IV                 | IV                 | IV                                                      | IV               |

*Note:* The effect of submission on housing allowance. Columns 1 and 2 show results from IV estimation of specification (5a) and columns 3 and 4 show results from the same specification with  $HA_i$  replaced by the fraction of housing allowance to public pension (scaled by 100). Both specifications use equation (5b) as first stage. When used, additional covariates to treatment status are a female dummy, age dummies (by year), and public pension decile dummies. Heteroskedasticity robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A8.** The effect of receiving a letter on submission by subgroup

|                             | Application submission |                 |                  |                 |
|-----------------------------|------------------------|-----------------|------------------|-----------------|
|                             | (1)                    | (2)             | (3)              | (4)             |
| Received a letter           | 8.8***<br>(0.6)        | 8.0***<br>(0.4) | 10.6***<br>(0.5) | 8.6***<br>(0.9) |
| × Female                    | 0.7<br>(0.7)           |                 |                  | -0.1<br>(0.7)   |
| × Age > 80                  |                        | 4.3***<br>(0.7) |                  | 4.0***<br>(0.8) |
| × Pension > median(Pension) |                        |                 | -2.1***<br>(0.7) | -0.6<br>(0.7)   |
| Female                      | 0.1<br>(0.1)           |                 |                  | 0.1<br>(0.1)    |
| Age > 80                    |                        | 0.1<br>(0.1)    |                  | 0.0<br>(0.1)    |
| Pension > median(Pension)   |                        |                 | -0.2**<br>(0.1)  | -0.2**<br>(0.1) |
| Constant                    | 1.3***<br>(0.1)        | 1.4***<br>(0.0) | 1.5***<br>(0.1)  | 1.5***<br>(0.1) |
| $R^2$                       | 0.035                  | 0.037           | 0.036            | 0.037           |
| N                           | 90,758                 | 90,758          | 90,758           | 90,758          |
| Sample                      | Main                   | Main            | Main             | Main            |

*Note:* The effect receiving a letter on submission by subgroup. The dependent variable is a scaled by 100. The covariates considered are; gender (female), being older than 80 years old, and having public pension above median public pension. Columns 1 to 3 show results from specification (7), and column 4 shows results from specification (8). Heteroskedasticity robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A9.** The effect of receiving a letter on acceptance by subgroup

|                             | Application<br>accepted |                 |                  |                 |
|-----------------------------|-------------------------|-----------------|------------------|-----------------|
|                             | (1)                     | (2)             | (3)              | (4)             |
| Received a letter           | 4.4***<br>(0.5)         | 3.6***<br>(0.3) | 5.4***<br>(0.4)  | 4.6***<br>(0.6) |
| × Female                    | -0.0<br>(0.5)           |                 |                  | -0.6<br>(0.5)   |
| × Age > 80                  |                         | 2.6***<br>(0.6) |                  | 2.3***<br>(0.6) |
| × Pension > median(Pension) |                         |                 | -1.7***<br>(0.5) | -0.8<br>(0.5)   |
| Female                      | 0.1<br>(0.1)            |                 |                  | 0.1<br>(0.1)    |
| Age > 80                    |                         | 0.2**<br>(0.1)  |                  | 0.1<br>(0.1)    |
| Pension > median(Pension)   |                         |                 | -0.2***<br>(0.1) | -0.2**<br>(0.1) |
| Constant                    | 0.9***<br>(0.1)         | 1.0***<br>(0.0) | 1.2***<br>(0.1)  | 1.1***<br>(0.1) |
| $R^2$                       | 0.012                   | 0.013           | 0.013            | 0.014           |
| N                           | 90,758                  | 90,758          | 90,758           | 90,758          |
| Sample                      | Main                    | Main            | Main             | Main            |

*Note:* The effect receiving a letter on application acceptance by subgroup. The dependent variable is a scaled by 100. The covariates considered are; gender (female), being older than 80 years old, and having public pension above median public pension. Columns 1 to 3 show results from specification (7), and column 4 shows results from specification (8). Heteroskedasticity robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A10.** The effect of receiving each letter on submission by subgroup

|                    | Application submission |               |                |                 |                       |                |
|--------------------|------------------------|---------------|----------------|-----------------|-----------------------|----------------|
|                    | Gender                 |               | Age            |                 | Public pension income |                |
|                    | Female<br>(1)          | Male<br>(2)   | Old<br>(3)     | Young<br>(4)    | High<br>(5)           | Low<br>(6)     |
| Myths              | 3.1***<br>(1.1)        | -0.3<br>(1.7) | 3.0<br>(1.8)   | 1.9*<br>(1.0)   | 2.8**<br>(1.1)        | 1.3<br>(1.5)   |
| RoT                | 1.0<br>(1.0)           | -1.2<br>(1.7) | 0.5<br>(1.8)   | 0.3<br>(1.0)    | 1.3<br>(1.1)          | -1.2<br>(1.5)  |
| Table              | 1.2<br>(1.1)           | -1.3<br>(1.7) | -0.8<br>(1.8)  | 1.1<br>(1.0)    | 0.4<br>(1.1)          | 0.8<br>(1.5)   |
| Constant           | 3.4<br>(2.6)           | 5.5<br>(4.3)  | 6.6**<br>(2.7) | 8.1***<br>(1.8) | 7.8***<br>(2.0)       | 8.7**<br>(4.2) |
| Female             |                        |               | Yes            | Yes             | Yes                   | Yes            |
| Age dummies        | Yes                    | Yes           |                |                 | Yes                   | Yes            |
| Pension decile     | Yes                    | Yes           | Yes            | Yes             |                       |                |
| $R^2$              | 0.018                  | 0.022         | 0.008          | 0.002           | 0.016                 | 0.015          |
| N                  | 7,005                  | 2,529         | 2,793          | 6,741           | 5,807                 | 3,727          |
| Sample             | Treated                | Treated       | Treated        | Treated         | Treated               | Treated        |
| F-test:            |                        |               |                |                 |                       |                |
| Joint significance | 0.027                  | 0.823         | 0.182          | 0.251           | 0.059                 | 0.388          |
| Myths = RoT        | 0.043                  | 0.601         | 0.171          | 0.117           | 0.161                 | 0.103          |
| Myths = Table      | 0.071                  | 0.565         | 0.037          | 0.429           | 0.033                 | 0.740          |
| RoT = Table        | 0.844                  | 0.968         | 0.476          | 0.435           | 0.445                 | 0.192          |

*Note:* The effect of receiving a letter on application submission by subgroups. The dependent variable is a scaled by 100. All columns show results from specification (6), but for different groups of treated subjects. Column 1 uses females, while column 2 uses males. Column 3 shows subjects are older than 80 years old, and column 4 subjects that are 80 years old and younger. Finally, column 5 uses subjects that have public pension above median, while column 6 those who have pension below median. Heteroskedasticity robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .